OKEHOCKING PRESERVE

MANAGEMENT PLAN

2006

Willistown Township, Chester County, Pennsylvania

5316 West Chester Pike, Newtown Square PA 19073

OKEHOCKING PRESERVE MANAGEMENT PLAN

Willistown Township, Chester County, Pennsylvania
5316 West Chester Pike, Newtown Square PA 19073

Prepared by:

Gaadt Perspectives, LLC – Environmental Planning and Consulting,
John M. Gaadt, AICP – Project Manager

Willistown Township,
Mary H. McLoughlin, Director – Parks and Preserves

Willistown Conservation Trust

2006

OKEHOCKING PRESERVE MANAGEMENT PLAN

ACKNOWLEDGEMENTS

This project was financed in part by a grant from the Community Conservation Partnerships Program under the administration of the Department of Conservation and Natural Resources, Bureau of Recreation and Conservation.

The Okehocking Preserve is under Township ownership because Willistown voters approved an open space referendum in 1999 earmarking a modest earned income tax increase to support bond funding. These funds were leveraged to the Department of Conservation and Natural Resources Community Conservation Partnership grant program and the Chester County Preservation Partnership and Municipal Grants programs to purchase a total of 165-acres between 2000 and 2006.

Thanks go to the Okehocking Preserve Management Plan Steering Committee members who volunteered their time: Mat Davis, Brian Raicich, Jill Red, Bill Rosenberry, Kelly Tickner, Alex Van Alen, and Coleman Walsh.

Thanks also go to the Willistown Township Planning Commission and Board of Supervisors for their support and contributions and to all those who contributed their time and efforts to making this plan a reality.

Finally, this plan is dedicated to the residents of Willistown Township, may it serve as a model for land management for many years to come.

TABLE OF CONTENTS

EXECUTIVE SUMMARY..... 6

SECTION I
INTRODUCTION..... 9

SECTION II
HISTORY/BACKGROUND INFORMATION..... 14

SECTION III
DESCRIPTION OF PROPERTY AND INVENTORY OF RESOURCES..... 23

SECTION IV
PRESERVE MANAGEMENT AND MAINTENANCE - GOALS, OBJECTIVES
AND IMPLEMENTATION STRATEGIES.....41

REFERENCES……77

APPENDICES……..80

APPENDIX 1: FIGURES……....82

Figure 1–Location Map
Figure 2–Area Photograph Base Map
Figure 3–Natural Features
Figure 4–Aquatic Resources and Soils
Figure 5–Scenic Resource Inventory and Photo Log
Figure 6–Historic Resources
Figure 7–Trails and Recreational Use
Figure 8–Meadow Inventory
Figure 9–Woodland Inventory and Priority Improvement Projects
Figure 10—Improvements

APPENDIX 2: CHECK LIST OF REPTILES AND AMPHIBIANS…….87

APPENDIX 3: THE GLOBAL INVASIVE SPECIES INITIATIVE—NATURE CONSERVANCY..90

APPENDIX 4: AUDUBON BIRD CENSUS (INCLUDING IMPORTANT BIRD AREAS INFORMATION) AND OBSERVATIONS (UPPER MAIN LINE YMCA)…….93

APPENDIX 5: MANAGEMENT SPREADSHEETS……99

Priority Improvement Projects 2006-2010
Management Task Sheets 2006-2010
Maintenance Task Sheet 2006-2010
Invasive Species Check List
Invasive Plant Management Timeline

APPENDIX 6: DEER MANAGEMENT REPORT – DELCHESTER CONSERVATION GROUP……..106

APPENDIX 7: OKEHOCKING CONSERVATION EASEMENT AND EXTENSION AND SECOND EXTENSION……..……..113

APPENDIX 8: FOREST BUFFER TOOLKIT (PA Stream ReLeaf program excerpts)……...149

APPENDIX 9: PHOTO LOG…….154

APPENDIX 10: PUBLIC PARTICIPATION RECORDS……160

OKEHOCKING PRESERVE MANAGEMENT PLAN

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

The intent of this publication is to provide Willistown Township with a document for managing and improving the unique natural resources of the Okehocking Preserve while providing important passive recreation opportunities (such as hiking, dog walking, birding and special community events) and management of a future active recreation site. As such, this publication is less a tome and more a reference guide, a living document that is intended to be "pulled off the shelf" and consulted periodically. Incumbent upon this approach is the need to review and alter the recommendations offered in an ongoing effort to enhance and interpret the needs of both the Township's residents for access, education, and recreation, as well as the unique flora and fauna that flourish here.

In some respects the Township views the Preserve not unlike the great National Wildlife Refuges intended both as habitat to sustain the health of the planet and as public spaces that provide public access for passive recreation, education and interpretation. The underpinning of this approach to preservation and recreation has its origins with the century-old conservationist ideals that sought to set aside natural places for the sake of human recreation and edification. The management objectives for the Okehocking Preserve include these historic conservationist ideals, as well as other objectives suited to the uniqueness of the Okehocking Preserve. Based upon these objectives, the management mission for the Preserve is to:

1) Provide human recreation and edification about natural resources;
2) Preserve and improve natural ecosystems and habitat;
3) Integrate into a larger network of protected open space and recreational lands that together sustain biodiversity;
4) Respect the tract's historic character;
5) Protect and improve this property as a sub-watershed of Ridley Creek, thus improving the watershed as a whole; and,
6) Integrate the primary uses/functions of this property - both the recreational and natural resource preservation and improvement uses/functions – as part of an overall management philosophy for the property.

While this tract alone can hardly be considered large enough to sustain real diversity, the Township recognizes that this parcel is a critical piece of a larger open space network of protected lands in close proximity to the Preserve that collectively have an effect on diversity. Approximately five thousand acres of the Ridley and adjacent Darby and Crum Creek watersheds are preserved under conservation easements, and the Preserve is located just northeast of the 2,600-acre Ridley Creek State Park and 650-acre Tyler Arboretum. This tract is also a critical link in the Upper Ridley Creek Greenway, a water-based open space and recreational greenway being established that links East Goshen Township Park in the north to Ridley Creek State Park and Tyler Arboretum to the south. Furthermore, the Preserve has been recognized as a critical component of the Upper Ridley/Crum Important Bird Area. (See Appendix 4 for map and description.)

As a piece of the larger ecological and recreational system, therefore, Willistown intends to foster continued cooperation among all the stakeholders of the region to provide a place for people, plants, wildlife and natural systems to thrive. Such is the true vision for the Okehocking Preserve.

With this in mind, this publication is divided into key reference-ready components: Introduction, History/ Background, Existing Conditions Inventory and Analysis, Management Goals and Objectives, Preserve Improvements and Maintenance Plan and Appendices with detailed management and maintenance strategies and materials intended for easy reference including Maintenance and Management Task Sheets, an Invasive Species Check list, Invasive Plant Management Timeline, and Priority Improvement Projects

List.

Section I, Introduction, is a brief physical, historic and acquisition summary; a description of the Preserve's management philosophy, mission and purpose; and a listing of the categories of management issues and opportunities for the Preserve. The History/ Background Section (Section II) is intended to summarize the Township's community demographics, planning function and park system that together contributed to the Township's decision to purchase the Okehocking Preserve. Section II also describes the Township's philosophy regarding the function of open space and how the Preserve will fill a need for passive recreation, future active recreation and natural resource protection and improvement. The Existing Conditions Inventory and Analysis (Section III) describes the physiographic characteristics of the Preserve in the context of the larger bioregion. Section IV, Management Goals and Objectives, describes the major goals and objectives that together will guide the overall management of the Preserve in the future. This section concludes with a description of Preserve Maintenance Issues and Improvements that directly reflect resource management goals and objectives intended to both highlight the enhancements intended for the Preserve during the planning horizon (years 1-5 and beyond) and describe the periodic maintenance needed to sustain the existing and proposed features of the Preserve. The final section, Section V, is comprised of several appendices: Appendix 1 contains the mapping related to the plan; the remaining appendices are reference materials and action spreadsheets collected to assist in the management and maintenance of the Preserve.

Okehocking's size, location, and unique features offer enormous opportunities to steward the land for the benefit of wildlife and plant life, for the promotion of ecological processes, and for recreational and educational public benefit. Importantly, it gives the Township the opportunity to demonstrate the stewardship techniques that can be utilized on private lands throughout the Township and will serve as an example that can be replicated throughout the region.

Critical to the Township's success in implementing this plan is the involvement of its partners and volunteers; clearly, the efforts described herein cannot be fully realized without their efforts. Furthermore, private and public funding will be essential to accomplishing the goals of this plan.

OKEHOCKING PRESERVE MANAGEMENT PLAN

SECTION I

Introduction

SECTION I
INTRODUCTION

The section contains a brief summary of the physical and historic attributes of the site; a description of its acquisition strategy; a description the Preserve's management philosophy, mission and purpose; and a listing of the categories of management issues and opportunities which the Township plans to address.

A. Brief Physical Description
The Okehocking Preserve is an important parcel of land for Willistown and area residents. In its 155 acres there are steep wooded slopes, 3600 feet of the main stem of Ridley Creek, a small tributary known as Delchester Run, seasonal ponds/potential vernal pools that house amphibian and reptile populations, open meadows, and wide floodplains and wetlands with two populations of Toothcup, a Pennsylvania listed rare plant. The land cleans water and air, provides habitat for mammals, birds, reptiles, amphibians, fish and insects, and offers recreational opportunities for the public. The significance of these 155 contiguous acres is that it provides passive recreation (and over 10 acres of future active recreation) to the densely populated suburbs of Philadelphia, located 20 miles east of the property. Such recreational opportunities contribute to area residents' quality of life and were ranked among the top activities desired by Township residents. The property's connection to thousands of acres of protected lands north in Willistown and neighboring Townships forms an ecological, open space and recreational Greenway link to Ridley Creek State Park and Tyler Arboretum to the south. Okehocking remains an important undeveloped viewshed along the busy West Chester Pike corridor at the gateway to Willistown Township and Chester County.

B. Brief History
The Preserve's history is just as rich. For thousands of years it was home to Native American Indians, was the site of the first Indian Land Grant given by William Penn, and later was settled by Welsh and then English Quakers.

C. Acquisition Plan
The unique characteristics of this site led the Township to earmark the property as a priority for protection Beginning in 2001, the Township successfully leveraged its Open Space funds with those granted from Chester County and the Pennsylvania Department of Conservation and Natural Resources to begin acquisition. This acquisition is part of a phased strategy that is anticipated to take several years to complete (depending upon funding availability). The three phases are as follows:

Phase I
In 2001, Willistown Township partnered with Chester County, the Willistown Conservation Trust (WCT), and the Department of Conservation and Natural Resources (DCNR) to acquire a total of 136+ acres. Willistown Township leveraged Open Space Funds from its 1999 open space referendum to obtain grants from the Chester County Preservation Partnership Program to purchase over 109 acres of the Preserve; WCT leveraged these funds to obtain a grant awarded by the DCNR Community Conservation Partnership Program funded by the Keystone Act of 1964 to purchase over 26 acres in the middle of the Preserve. WCT then donated all but 4.4 acres and an historic bank barn to the Township. A substantial bargain sale component from the landowner was crucial in making the acquisition possible. The Township donated a conservation easement to WCT on its 132+/- acres (see Appendix 7 for a copy of the easement).

Phase II

In 2003, Willistown Township leveraged Open Space Funds to obtain a Land and Water Conservation Fund grant awarded through the DCNR Community Conservation Partnerships Program to Preserve an additional 23+ acres of woodland and open meadow contiguous to Phase I land. These lands were added to the conservation easement held by WCT.

Phase III A and B

This phase is comprised of 22 acres, 10 acres of which are contiguous to the existing Preserve (and comprise Phase IIIA) and 12 acres of which are to the east of Delchester Road (and comprise Phase IIIB). As of the writing of this plan, the Township has been awarded a DCNR Community Conservation Partnerships Program grant and a Chester County Preservation Partnership Program grant to acquire Phase IIIA with matching Township Open Space funds. This land is the last remaining unprotected parcel contiguous to Okehocking Preserve. Settlement is scheduled for March 1, 2006. The 12 acres identified for Phase IIIB are not seen as urgent as they are separated from the Preserve by Delchester Road. While Phase IIIB is still under consideration, there are no Open Space Funds available for acquisition; recently the owner of this parcel notified the Township that they intend to sell the land on the open market.

D. Purpose of the Management Plan

The purpose of the Management Plan is to recognize the unique characteristics of the site, including its physical features - its landforms and soils, hydrologic features, vegetation, wildlife, scenic resources, trails, man-made and historic features – as well as its recreation, education and restoration opportunities. The Plan contains a vision statement and management philosophy for the property, an inventory of the property's natural and recreational features, a compilation of management goals and objectives for the property, including management issues and opportunities, and a description of implementation actions within the context of a property management budget.

The Plan will be implemented by the Township in a cooperative fashion under the guidance of the Director of Parks and Preserves in association with the Willistown Township Environmental Advisory Council, the Willistown Township Parks and Recreation Board, other Township boards and staff as necessary, and partner organizations.

E. Okehocking Preserve Management Mission, Philosophy, and Management and Maintenance Goal Outline

1. Management Mission

The management mission for the Preserve is:

a) To provide human recreation and edification about natural resources;
b) To preserve and improve natural ecosystems and habitat;
c) To integrate into a larger network of protected open space and recreational lands that together sustain biodiversity;
d) To respect the tract's historic character;
e) To protect and improve this property as a sub-watershed of Ridley Creek, thus improving the watershed as a whole; and,
f) To combine the primary uses/functions of this property - both the recreational and natural resource preservation and improvement uses/functions – as part of an overall management philosophy for the property.

2. Management Philosophy

Okehocking Preserve is to function as both an area for natural resource protection and improvement, as well as a place for public enjoyment and recreation. The primary mission of this management plan is to fulfill both of these functions to the highest capacity without one deterring from the other. In essence, this plan must integrate these two functions.

3. Preserve Management and Maintenance—Goals, Objectives and Implementation Strategies

The goals, objectives and implementation strategies are discussed in detail in Section IV. Following is a list of the Goals and Objectives for Preserve Management and Maintenance: *(NOTE: While all of the Management and Maintenance Goals are important, the success of recreation and natural resource protection at the Preserve depends upon invasive plant management and deer management, as the Preserve is inundated with both.)*

a) Okehocking Partnership Network Management

Goal 1: Maintain relationships with current partners and coordinate project commitment implementation.

Goal 2: Expand upon current partnership commitments and bring new partner organizations into the Okehocking network.

b) Natural Resources Management

Goal 1: Establish routine monitoring practices that ensure water quality, stream health, woodland protection, and wildlife diversity within the Preserve.

Objective 1*. Monitor water quality, stream bank stability and erosion of Ridley Creek and Delchester Run.*

Objective 2*. Monitor woodland health.*

Objective 3*. Monitor wildlife populations.*

Objective 4*. Regularly monitor to ensure the spray irrigation infrastructure is functioning properly and the spray water quality is not detrimental to the Okehocking Preserve.*

Objective 5. *Perform routine monitoring of forest edge and riparian restoration locations and any other improvement project sites.*

Goal 2: Promote native plant and wildlife communities

Objective 1*: Increase the survival of large mature trees in order to keep the forest canopy intact; re-establish understory in woodlands and riparian areas contingent upon deer management.*

Objective 2: *Restore forest edges to provide animal habitat and shade out invasive species.*

Objective 3: *Remove identified hedgerows that fragment portions of the Preserve and extend the riparian buffer along Delchester Run.*

Objective 4: *Reduce deer impacts to vegetation through the use of protective measures and managed harvests.*

. **Goal 3.** Manage the Preserve for Water Resource Protection and Improvement

Objective 1: *Establish new and enhance existing riparian buffers along stream corridors of Delchester Run and Ridley Creek*

Objective 2: *Remove the dam and ice dam based upon engineering and design plan.*

c) Recreation Management

Goal 1: To develop and maintain trails that are erosion-free and adequate to serve visitors.

Goal 2: To offer recreational use consistent with the terms of the Preserve's conservation easement while respecting the natural, scenic and historic resources of the Preserve.

Objective 1: *Coordinate the management strategies outlined herein with future actions taken by the Township to offer active recreation on select portions of the Preserve.*

Objective 2: *Promote alternative passive recreational activities and environmental recreation in addition to traditional activities.*

Goal 3: Accommodate public and private group functions operated in a manner consistent with the overall management objectives of the Okehocking Preserve.

d) Education and Outreach Management

Goal: Make available for education the ecological, recreational and historical resources of the Okehocking Preserve and establish programs to promote the understanding, stewardship, advocacy and use of these resources.

e) Historic Resource Management

Goal 1: Preserve, and maintain the integrity of selected historical resources, acknowledge ruins or any historic structures that will be removed.

Goal 2: Document known human use of the land for both reference and public education purposes.

f) Agriculture Management

Goal: Establish a program to promote agricultural use on designated portions of the Okehocking Preserve.

g) Security Management

Goal: Ensure that the Okehocking Preserve is a safe place for all visitors; in addition, ensure the protection of the Preserve's wildlife, habitat areas, historic structures, vegetation and recreational resources.

h) Preserve Maintenance Issues

Goal: Routine maintenance of all Preserve areas, including tasks listed below, will be performed or sub-contracted by Willistown Township.

Objective 1: *Trail Maintenance*
Objective 2: *Mowing*
Objective 3: *Parking Facilities and Access Roads*
Objective 4: *Historical Resources*
Objective 5: *Spray Irrigation System*
Objective 6: *Restoration Planting and Deer Deterrent Maintenance*
Objective 7: *Weed Management and Invasive Species Control*

i) Preserve Improvements

Goal: To fully install the improvements intended for the Preserve, assess the usefulness of such improvements over time, and make additional improvements as necessary.

OKEHOCKING PRESERVE MANAGEMENT PLAN

SECTION II

History/Background Information

SECTION II
HISTORY/BACKGROUND INFORMATION

A. Community Character/Profile

1. Location
The Okehocking Preserve is located in Willistown Township, Chester County, Pennsylvania. The Township's 11,770 acres contain primarily agricultural, residential and wooded land. Higher density residential and commercial centers are located in the northern portion of the Township that borders Malvern Borough and Paoli. The central and southern portions of the Township have a rural atmosphere and include vast rolling hills, equestrian centers, and historic Quaker barns and settlements. The southern border of the Township retains significant high density residential housing.

Willistown Township is adjacent to five Chester County townships and two Delaware County townships. Neighboring townships are; East Whiteland, Easttown, Tredyffrin, Westtown, East Goshen, Newtown, and Edgmont. While the Okehocking Preserve is primarily used by Willistown Township residents, residents from these adjoining municipalities and beyond utilize the resources of the Preserve as well.

2. Climate
The Okehocking Preserve is located at approximately latitude 40^{o}N and experiences the temperate climate typical of the Mid-Atlantic region; in fact, the Preserve also corresponds with the Mid-Atlantic plant hardiness Zone 6. Average monthly temperatures range between 18^{o} and 86^{o} Fahrenheit, and some summer day's reach well into the nineties. Average rainfall for the Preserve is forty-two inches annually.

3. Willistown Township History
The settlement of Willistown Township began in the late seventeenth and early eighteenth centuries. Willistown was part of a 50,000-acre property owned by William Penn that was designated for the settlement of Quakers from North and South Wales, Haverford shire, Shropshire, and Cheshire England.

Quaker influence on Willistown development and property arrangements can still be seen today. The Quakers developed one area of their community land for the meetinghouse, school, and trade centers in a location that was no further than one day's horse ride from any farmstead. Areas surrounding the small town location were divided into family farms. This arrangement allowed the Quakers both a religious and agriculturally based society. Quaker meeting houses and schools were once located in the Sugartown, Whitehorse, and Okehocking areas of Willistown Township. In 1984 Sugartown was listed in the National Register of Historic Places, in 1993 the Okehocking Historic District was included, and in 2001 the Historic Whitehorse Village was included.

Three extended Quaker families historically owned the majority of land in Willistown Township. The Yarnalls, Smedleys, and Garretts married among each other to ensure their land interests would be maintained. All three families farmed the rich land of Willistown Township and also operated mills along Ridley Creek. The remains of a Garrett bark mill and tanyard can be found where Ridley Creek runs through the Okehocking Preserve.

4. Okehocking History

a) Native American History from Acres of Quakers (compiled by Nagy and Goulding*)*

Okehocking Preserve constitutes 155 acres of the 500-acre land grant from William Penn to the Okehocking band of the Lenni Lenape Indians, the first Native American land grant in the American colonies. Because of the constant fear of being removed from their grounds, the Okehockings petitioned the Provincial Council for a secure tract of land where they would no longer be mistreated. They probably chose the Willistown land because of a symbolic turtle-headed rock outcropping located within the Okehocking tract.

The Okehocking Clan belonged to the Unamis (known as the Down River People), one of the three Lenni Lenape tribes. The Unamis Tribe's symbol was the tortoise, who they believed represented mother earth and was a symbolic "intermediary between the visible and invisible worlds around them." (Lindborg) The Unamis Tribe was part of the Algonquin Nation, better known as the Lenni Lenape, the "Original People."

Lenape was the Indian name for the Delaware River. The European settlers changed the river's name to Delaware, hence the Lenni Lenapes were labeled Delawares by the settlers. The scholarly consensus of the translation of Okehocking is "encircling land" - "okay" meaning encircled, "hocking" meaning land or earth. (Becker)

In October, 1702 the Okehocking Clan (or band) accepted the grant of 500 acres of mostly rugged and undulating ground. Unlike the tracts owned by the English Quaker farmers (Charles Whitaker, Francis Yarnall, Peter Thomas and Thomas Massey) who lived nearby, this piece of land, with the exception of the flood plain, was considered to be of little agricultural value. The land configured as a tilted square, located just north of present day West Chester Pike, south of Goshen Road and bounded by Garrett Mill and Plumsock Roads. The orientation of this piece of land was unusual since all other tracts in Willistown Township were of rectangular shapes whose boundaries followed either an east-west or north-south axis, and generally paralleled township lines. Instead of following property lines in the usual manner, the Delchester Road, laid out in 1710, ran directly through the center of the Okehocking lands, and divided the tract in half.

In 1674/75 the warring Iroquois destroyed the Susquekannock Confederacy which included the Lenni Lenapes. The Lenapes agreed to disarm and would not independently declare war. In return they were promised peaceful co-existence with their conquerors. The Lenapes were a matriarchal society, and to prevent inbreeding, men were never allowed to marry within their own clan. Instead they "married" into the wife's clan and lived with her family.

The increasing immigration of European settlers along the lower regions of the Crum, Ridley and Chester Creeks encroached upon the Lenni Lenape lands, forcing the Indians to migrate inland and northward. The Okehocking Clan, consisting of no more than two dozen men, women and children, relocated to the Willistown land and used it for their summer encampment from 1696 to the mid 1730's. They wintered northward in their ancestral hunting grounds near the upper Schuylkill. By inhabiting two different locations yearly, they did not over use any one particular area and thereby render it useless. In essence they created their own crop rotation system.

The floodplain along Ridley Creek provided limited fertile ground for the raising of crops. Burning of the fields to rid brush and undergrowth provided open ground for planting of crops, especially maize (multi-colored Indian corn), their main staple. Since the clan was migratory, their crop harvest was not abundant. In addition to crop growing, the women were the gatherers of fruit, seeds and nuts found in the nearby forests, and frogs and turtles from the streams. The men hunted game and fished.

Although the land was known as Okehocking Indian Town, no archeological digs have revealed any traces of an "Indian Village." The clan lived in tent-like structures which enabled them to be more mobile, and by trading with the European settlers, the Okehockings learned to use metal instead of stone implements and utensils. They utilized a stone-tipped arrow shaft, and preferred hunting with a bow, because of its noiseless character which did not alert their prey.

The Indians, who had roamed at will through the Pennsylvania forests for centuries, did not understand the concept of land ownership and the creation of private property lines. These feelings were in direct contrast with the posture of the nearby Quaker farmers, who purchased their land, established perimeter borders, and felt they controlled the right of trespass. As the Okehockings continued to pursue game beyond the confines of their land, the neighboring landowners became increasingly annoyed, and finally in 1718 the Indian families began the exodus from their summer home along the Ridley Creek. They removed initially to the Shamokin area (Swatara Creek), however they continued to return to their summer hunting grounds in Willistown Township until 1735. The Lenape's ultimately settled in Oklahoma, where by 1900 they had become farmers and merchants. In 1738 the Yarnall brothers, Amos and Mordecai, received proprietary patents for the vacated land.

b) Okehocking Historic District

The Okehocking Preserve is part of the larger 500 acre Okehocking Historic District with its northern border as Goshen Road and the southern border as Route 3. The Historic District stretches from between Dutton Mill and Garrett Mill roads towards its eastern boundary on Plumsock road.

The Okehocking Historic District was listed in the National Register of Historic Places in 1993 because it was the first Native American land grant in the country and the only one in Pennsylvania.

B. Community Demographics

1. Population

The population of Chester County assessed for the 2000 census was 433,501 people. An estimate for countywide population in 2005 is 459,400, a six percent increase above the 2000 census. The projected population of Chester County in 2010 is 483,500 people.

In the 2000 census, Willistown Township had a population of 10,011 people. County Planning Commission projections estimated the 2004 population of the Township to be 10,746 people, a 7.3 percent increase. Population projections for 2010 place 10,460 residents in Willistown Township, a 4.3 percent decrease from 2004. Whether a decline in actual population will occur is unknown; recent development activity indicates that population may stabilize but not necessarily

decline.

2. Population Density

Chester County has a population density of 573.4 people per square mile.

The population density of Willistown Township in 2000 was 550 people per square mile. Estimates for 2004 are 590 people per square mile. Population projections for 2010 indicate a slight decline to 575 people per square mile.

The population densities of neighboring East Whiteland and East Goshen Townships are 848.6 and 1660.5 people per square mile respectively. The population densities in these townships are largely attributable to suburbanization. That said, it is also important to note that population projections for groups as small as those contained in townships have limited accuracy. The growth rate in small populations is more dependent upon new construction and shifting land use, rather than a reproductive growth rate.

3. Age Distribution

The median age of Willistown residents is 42.8 years old. The Township is 48.4 percent male, and 51.6 percent female. The age distribution of Willistown residents in 2000 is shown below.

Age Category	**2000**			
	#	**%**	**Chester County #**	**PA #**
Total Population	**10,011**	**100.0**	**433,501**	**12,281,054**
Male	4,841	48.4	212,739	5,929,663
Female	5,170	51.6	220,762	6,351,391
Under 5 years	589	5.9	29,330	727,804
5 to 9 years	609	6.1	32,556	827,945
10 to 14 years	703	7.0	33,105	863,849
15 to 19 years	602	6.0	29,600	850,986
20 to 24 years	278	2.8	23,410	746,086
25 to 34 years	989	9.9	54,720	1,560,486
35 to 44 years	1,638	16.4	76,903	1,948,076
45 to 54 years	1,736	17.5	64,406	1,705,032
55 to 59 years	721	7.2	22,583	619,969
60 to 64 years	552	5.5	16,211	511,656
65 to 74 years	968	9.7	27,128	969,272
75 to 84 years	516	5.2	17,782	712,326
85 years and over	90	0.9	5,767	237,567

4. Economy

Pursuant to the Township's recent Comprehensive Plan, "Guidelines for Growth," statistics available from the Chester County Planning Commission website (chesco.org/planning), and the U.S. Census, the unemployment rate in Willistown Township is 3.8 percent.

Willistown residents commute an average of 25.4 minutes to work.

5. Education

Willistown Township residents are typically well educated: 95.3 percent of all residents having graduated high school, and 56.6 percent of residents have bachelor's degrees or higher.

C. Community Planning

1. Comprehensive Plan

Under the Pennsylvania Municipalities Planning Code, all municipalities in the Commonwealth are given the authority to prepare comprehensive plans to outline future goals and policies for growth.

The first comprehensive plan for Willistown Township was completed in 1961 and adopted in 1962. Amendments to the plan were adopted in 1968 and 1980 to confront population growth and construction of sewer systems on the Route 202 corridor.

The current comprehensive plan is the third amendment to the original 1962 plan. Adopted in 1997, the current plan *Guidelines for Growth* has three goals:

a) Protect community values

The protection of community values involves policies that emphasize natural resource protection and preservation of man-made environmental features that enhance the rural character of Willistown Township and protect ecologically sensitive areas.

b) Guide future growth

The aptly titled *Guidelines for Growth* uses land use classification and population density to divide Willistown Township into areas where growth is to be encouraged or restricted pursuant to the best interests of the community.

Residential, industrial, and commercial growth is encouraged in the densely populated northern portion of the Township that borders Malvern Borough, Lancaster Avenue, and Paoli. This area is classified as urban because the population density is above 880 persons per square mile.

The north-central portion of the Township contains both rural and suburban landscapes. A suburban area is one with a population density of between 375 and 880 persons per square mile.

With the exception of West Chester Pike (Route 3), the southern portion of the Township remains predominantly rural. The population in this area is not expected to exceed 375 persons per square mile (even with development along Route 3). The southern border of Willistown Township and Edgmont Township is where the Okehocking Preserve is located.

Guidelines for Growth encourages development in areas that are predominantly suburban. Suburban areas with the highest population density are locations where the Township would like to see integrated land use among commercial, industrial, and residential interests. The goal of integrated land use is to provide a variety of services and options to residents while building a sense of community and easing the transportation burden and sprawl.

c) Provide community facilities and services
Guidelines for Growth plans for community facilities and services that will be adequate for current and future residents. Community facilities include parks and recreational areas, a library, educational facilities, and municipal buildings. Community services include emergency response and assistance, water, sewage, stormwater management, transportation infrastructure maintenance, landowner assistance, and private land stewardship. The need for such services and facilities is evaluated periodically by the Township given current and estimated need, potential partnership with neighboring townships, and current uses and needs. Emphasis for this planning effort is placed on parks and recreational facilities.

D. Park and Preserve System

The Township currently provides a variety of open space options for residents; among them are three parks, two undeveloped open space areas, and the Okehocking Preserve. These facilities are:

Garrett Mill Park
Size: 20 acres
Use: Active Recreation (1 soccer, 2 baseball fields, a sand volley ball court, picnic pavilion, playground equipment recommended for ages 5-12, restroom facilities, 70 parking spaces)

Mill Road Park
Size: 30 acres
Use: Active Recreation (2 baseball/softball fields, picnic pavilion, restroom facilities, concession stand, parking, playground equipment recommended for ages 5-12 known as Samantha's Park)

Greentree Park
Size: 7.0 acres
Use: Active Recreation (multi-purpose field, basketball court, playground equipment recommended for ages 3-5 and 5-12, gazebo, restroom facilities, picnic area.)
Note: Owned by Great Valley School District and under lease to the township through the year 2039. All improvements have been provided by the Township.

Okehocking Preserve
Size: 155 acres
Use: Passive Recreation, potential for Active Recreation in southwest fields

Spring Road Open Space
Size: 16.2 acres
Use: Open Space, Undeveloped Passive Recreation

Line Road Open Space
Size: 27 acres
Use: Open Space, Undeveloped Passive Recreation with Potential Active Recreation

In addition to Township-owned lands, there are over 4,500 acres of protected private lands within a 3-mile radius of Okehocking. A majority of these lands allow for passive recreation opportunities, predominantly for hiking and horseback riding. There are over 3,200 acres to the south east of the parcel which constitute Ridley Creek State Park and Tyler Arboretum.

Based upon the heretofore park planning standards used by the Township in its "Open Space, Recreation, and Environmental Resources Plan," park needs are most evident in the southern portion of the Township. Furthermore, the age distribution in Willistown ("middle" age group comprised of the work force and retired individuals) corresponds well with the intended passive use recreation provided by the Okehocking Preserve. Also important to note is the strong preference for hiking expressed in the findings of the Open Space Plan. Respondents to the Township's Community survey indicated that walking or hiking was the number one recreational activity in the Township, almost two-thirds of all respondents participate routinely. Furthermore, support for additional hiking opportunities, of which the Preserve is now part, also received the highest level of support. Clearly, the uses prescribed for Okehocking meet the preferences outlined in the Township's open space and park planning efforts. In 1999, Township residents passed an open space referendum by 70% in favor of a tax increase earmarked to purchase land or easements for open space, natural resource protection and recreation. The Okehocking Preserve is essentially the realization of a long-standing desire expressed by the residents of the Township.

Survey statistics from the *Pennsylvania Recreation Plan 2004-2008* support the recreational importance of Okehocking Preserve, as all but one of the following top ten most popular recreational activities in the southeast region of Pennsylvania are offered at Okehocking: walking. sightseeing, swimming (not offered at Okehocking), viewing nature, visiting wild areas, picnicking, jogging, nature walks, and hiking.

E. Function of the Preserve and its Compatibility with Adjacent Land Uses

Willistown Township boasts an abundance of open space, a high quality of natural resources and a citizenry committed to protecting these resources. Through private and public efforts, there are over 3,500 acres of permanently protected lands within the borders of the Township. The ecological benefit of these protected lands further benefit the public by offering a trail network which connects to the Okehocking Preserve. Coupled with the Township's parks and Preserve, residents are able to enjoy the character of Willistown, namely its open rolling fields, woodlands, meadows, wetlands and waterways. In this way, the Preserve compliments the Township's more active recreational facilities and playgrounds, including Green Tree Park, Mill Road Park and Okehocking's contiguous neighbor, Garrett Mill Park.

In addition to links within the Township, Okehocking is a keystone property in the Upper Ridley Creek Greenway, an open space and recreational corridor of land that follows the Ridley Creek from its headwaters in East Goshen Township, through Willistown Township and into Edgmont Township. Included in this greenway are the 3,300 acre open space complex of Ridley Creek State Park and Tyler Arboretum. It is the hope of the Township that all remaining portions of this greenway will be protected in the future. Also of note, Okehocking is located in the Upper Ridley/Crum Important Bird Area (#72), as designated by the Pennsylvania Audubon Society.

Willistown Township has an extensive system of dedicated and undedicated trails that are well used by equestrians and pedestrians. Okehocking Preserve is an integral connection between Delchester and Garrett Mill Road and as a starting place for trail use throughout the Township. Historically, such trails were used primarily for equestrian activities but hikers have also been known to frequent these trails. Trail use on private property is generally permitted by invitation and liability is restricted by Pennsylvania law.

As described in Section 1, the Township is undertaking a phased acquisition strategy for the Preserve that has resulted in the protection of a wide corridor of land held both in fee ownership and conservation easements. As stated above, this greenway, anchored by Ridley Creek State Park and Tyler Arboretum to the south will comprise thousands of acres of open space within only 20 miles of Philadelphia.

The existing service area for the Preserve is Willistown Township, however residents of nearby Townships and Boroughs have "discovered" the attractions the Preserve has to offer. Given the rapid suburbanization of the Rt. 3 corridor and the proximity to Philadelphia, Malvern and West Chester, it is important that the Township continually monitor usage and demand for the Preserve in coming years in order to protect the Preserve's resources and assess future recreational needs. Should sufficient recreational need exist, the Township will consider the benefit of developing the Garrett Mill field for active recreation in order to alleviate the stress on Okehocking.

OKEHOCKING PRESERVE MANAGEMENT PLAN

SECTION III

Description of Property and Inventory of Resources

SECTION III
DESCRIPTION OF PROPERTY AND INVENTORY OF RESOURCES

A. LOCATION OF STUDY AREA
The Okehocking Preserve is located in the southwestern portion of Willistown Township, Chester County, Pennsylvania (see Figures 1 - Location Map and 2- Base Map). The tract is bordered on the south by West Chester Pike (Rt. 3), on the west by Garrett Mill Road, on the east by Delchester Road, and on the north by private property. The tract is just north of and upstream of Ridley Creek State Park. Both the Preserve and the Park are located in the Ridley Creek Watershed and contain important segments of Ridley Creek.

B. PHYSIOGRAPHIC FEATURES OF THE PRESERVE

1. Physical Features

a) Landforms
The Okehocking Preserve's rolling hills are characteristic of Willistown Township and Chester County. Elevation changes within the Preserve range from 225 to 385 feet. The lowest lying areas are along Ridley Creek and Delchester Run and elevated areas along the northern edge of the park provide the best scenic overlooks of the entire Okehocking Preserve and Ridley Creek valley, including Ridley Creek State Park.

Within the Preserve are critical resources such as steep slopes, flood plains, wetlands, and hydric soils (see Figure 3, Natural Features). A steep slope, as defined both for this study and in the Township's ordinances, is one where the land rises above a 15% incline. Within the Preserve these areas should not be disturbed for several reasons, among them: to prevent erosion of the hillsides, to restrict sedimentation of the streams, and to maintain the sensitive hydrology that supports the Preserve's flora and fauna and assists the watershed as a whole. Flood plains, wetlands, and hydric soils are all found in the southern portion of the Preserve along the Ridley Creek and Delchester Run.

b) Geology
The most common geologic form underlying the Okehocking Preserve is that of crystalline rocks, specifically Gabbro Gabbroic Gneiss, and Granite Gneiss. Crystalline rocks are beneath the majority of the Ridley Creek watershed. Groundwater available for withdrawal can be found in crystalline formations due to weathering of the top-most layer and fractures beneath the weathered layer. Crystalline formations often are less productive as aquifers because the amount of water available is dependent upon the connectivity of the cracks and fractures within the rock.

A small portion of Serpentine rock underlies the southwestern corner of the Preserve. Considered a rare formation due to its composition and the fact that it was heavily mined in the past, Serpentine provides a welcome climate to certain species of rare plants depending on how close to the surface the geology is. Just to the south of the property, a portion of the area underlain by Serpentine rock has been placed on the Pennsylvania Natural Diversity Inventory (PNDI). Further information on PNDI sites can be found in the Township's "Open Space, Recreation, and Environmental Resources Plan."

c) Soils
The soils within Okehocking Preserve are classified as prime agricultural soils according to Natural Resource Conservation Service listings. Portions of this property have

historically been used for agricultural purposes, but only one field remains in farming practices. Prime agricultural soils are formed through mineral weathering and the decomposition of organic matter over hundreds of years. Such soils are highly fertile and valuable as a natural resource. The abundance of agricultural soils within Willistown Township and Chester County has instigated agricultural conservation initiatives in the region. Willistown Township encourages conservation site design and limits site disturbance to help protect such soils.

2. Hydrologic Features

Okehocking Preserve is located in the northern section of the 32 square mile Ridley Creek watershed and houses a 3,600-foot stretch of the main stem of Ridley Creek and a 3,200 foot first order headwaters tributary to the Ridley known as Delchester Run (see Figure 4, Aquatic Resources). The Pennsylvania Department of Environmental Protection has designated the northern section of Ridley Creek, including the waters in Okehocking, as a High Quality Cold Water Fishery. The Creek meanders through the parcel from the northwest corner of the property and exits under West Chester Pike, proceeds through Ridley Creek State Park and eventually empties into the Delaware River. The headwaters of the Creek are located in northern Willistown and eastern East Goshen townships. The Ridley Creek watershed is a major source of the Philadelphia area water supply. The 155-acre Preserve offers critical services to the watershed as a whole.

The creek and the riparian buffer beside it provide a part of a wildlife corridor that goes from Ridley Creek State Park through Okehocking and into the preserved open space to the north. (Note: the riparian buffer needs improvement and restoration work.) The large size of the underpass below West Chester Pike allows wildlife movement - from turtles to deer and recently coyote – down toward and up from the 3200-acres of Ridley Creek State Park and Tyler Arboretum.

The Creek is stocked with trout in Ridley Creek State Park in the spring for the enjoyment of the fishing public.

In order to maintain and enhance the quality of water in the creek, stormwater run off should be minimized, riparian buffers should be established and restored along the main stem and Delchester Run, erosion minimized and invasive species should be controlled. The wildlife passage between Okehocking and other natural areas, should be maintained with the assistance of invasive species management.

In addition to Ridley Creek, Okehocking contains a hillside spring, suspected vernal pools, and a water reclamation area that manages treated sewage effluent and recharges groundwater.

a) Possible Vernal Pools/Seasonal Ponds

The Preserve contains what may be at least two vernal pools which represent important habitat for reptiles and amphibians as well as other species (See Figure 4, Aquatic Resources). According to the Vernal Pool Association, about one third of amphibians in the eastern United States are strongly dependent on vernal pools as breeding sites. From vernalpool.org, a vernal pool is a contained basin depression lacking a permanent above ground outlet. It fills with water with the rising water table of fall and winter or with the runoff of winter and spring snow and rain. These pools contain water for a few months in the spring and early summer. By late summer, a vernal pool is generally, but not always,

dry. Because of its periodic drying, the pool does not support breeding populations of fish It is the nature of vernal pools to be in flux between wet and dry as they are highly dependent on rainfall for their water level. Many organisms have evolved to use a temporary wetland which will dry but where they are not eaten by fish. These organisms are the "obligate" vernal pool species because they must use a vernal pool for various parts of their lifecycle. Some obligate species include fairy shrimp, wood frogs, and mole salamanders. Review of the herpetological survey (See Appendix 2 – Check List of Reptiles and Amphibians) should be conducted to see if obligate species have been specifically noted in the locations of the potential vernal pools. If they have not been noted at these locations, a herpetologist or other qualified person (potentially affiliated with a local college or university) should observe the sites which are potential vernal pools for these obligate species and record them to verify if they are vernal pools. If they are not deemed "vernal pools", as seasonal ponds they remain important habitat.

b) Ridley Creek Ice Dam and Mill Race

Ridley Creek is dammed just above where Delchester Run flows into it from the eastern portion of the Preserve. The structure most likely replaced an original dam used to run a bark mill and tannery.

c) Spring

The only known spring is located south of the Willistown Conservation Trust barn along an existing trail. The spring flows directly onto the trail, and in order to maintain the integrity of the spring, prevent erosion, and decrease the likelihood of injury to hikers, the trail should be improved to allow unimpeded spring flow. Improving the trail will minimize erosion, reduce turbidity in the water, and will eliminate a potentially slippery trail segment for hikers.

d) Spray Irrigation System

Okehocking Preserve contains a spray irrigation system (Penn's Preserve System - WQM Permit #1596405) that plays an important role in protecting the water quality of Ridley Creek downstream from the park and recharging the ground water at Okehocking. Spray irrigation is a sewage treatment system that manages wastewater and applies it to fields and certain restricted agricultural areas. Goals of spray irrigation include elimination of stream discharges, reduced water treatment costs, groundwater recharge, and better pollution management. Irrigation can also reduce nutrient costs and provide irrigation otherwise not available to growing crops.

Wastewater is treated in the upper pond, stored in the lower pond, and then sprayed on the fields in the northeast corner of the Preserve. A pump house is located in the center of the Okehocking Preserve and is used to manage flow and control irrigation periods. The irrigated fields are planted in reed canary grass (*Phalaris arundinacea*), which absorbs what remains of any detrimental materials and excess nutrients. Reed canary grass is known for is ability to remove large quantities of nitrogen from soils and withstand wet soil conditions in both cool and hot temperatures. The grass is harvested and removed from the site currently twice per year. Optimally the fields should be mown every third month starting in the end of April through the end of October, so that the spray heads are easily visible to the mower operator and the vegetation does not impair proper operation of the spray heads. Clippings can be used for feed for animals and must be baled and removed from the land because of nitrogen uptake in the land. Water that has passed through the grass and soil after irrigation and percolation is fully cleansed and recharges groundwater supplies.

Spray Field 1, parallel to Delchester Road, is 6.81 acres and Spray Field 2, adjacent to the woodland, is 2.15 acres. Some spray heads allotted to Spray Field 2 are located on the southern side of Spray Field 1. The state Department of Environmental Protection (DEP) determines how much and how often the fields are sprayed through dictating how many hours per week the facility can be active. The soils and their ability to absorb water and cleanse the nutrients are partially responsible for how much spray can be released.

The Township contracted engineers, Yerkes Associates, manages the system. According to Yerkes, nature does most of work. The parameters that do not permit spraying are: spraying cannot occur while it's raining, after a day of rain, or during more than a 10-15 mph wind. This generally equates to spraying once per week (according to DEP, the fields must be sprayed once per week). There are also seasonal limitations to spray due to rain fall and ground temperature. During the summer, Spray Field 1 sprays a total of 26 hours per spray session at 300 gallons per minute which equals 450,000 gallons sprayed per week. In September, DEP communicates how many days spraying can occur during the winter. Generally, Spray Field 2 sprays 5 hours per week from December through March or February depending on soil temperature. At 400 gallons per minute (gpm) in Winter, with both fields going approximately 120,000 gallons are sprayed per week. Spray Field 1 is at 300 gpm and Spray Field 2 is at 100 gpm.

According to the Township's Act 537 Plan Update (Nov. 2001), the spray irrigation system is designed to handle 0.08 MGD with completion
in two phases. Phase 1 consists of 45,000 GPD allocated to 222 townhouses in Penn's Preserve and Willistown Chase. As of June 2000, a total of 177 units are on line leaving a balance of 45 to be constructed as part of Phase 1. The balance of the approved capacity (35,000 GPD) is intended to be used for proposed office buildings within the Route 3 corridor. The additional spray fields needed for Phase 2 have not yet been constructed.

The current fields are at maximum capacity. Future capacity will call for major revisions and construction to expand the existing facilities; these facilities would include lagoons, spray areas, pumps, and additional piping for the control building. The facility plan calls for a total of 2 more spray areas to be built in the wooded area between the lagoons and existing spray area based on potential commercial development of adjacent lands. There is some question as to whether additional spray irrigation may be permitted within the Okehocking Preserve given the protection and conservation of additional lands. To expand, the Township would need to assess viability of additional spray within the Preserve and planning approval from DEP. Yerkes estimates the planning and permitting process to take one year.

The potential to transition the existing spray fields to drip irrigation and utilize the fields for some type of recreation has been discussed with Yerkes. Although spray is more cost effective and needs less maintenance than drip, the main drawbacks are that it takes up a lot of land and you can't use the land during periods of spraying. (Note: While some communities utilize moveable spray systems, such as center pivot rigs, for recreation fields, this option has yet to be considered at the Preserve). Drip irrigation has a much smaller footprint, taking up 1/3 to ¼ the area needed for spray. The drip pipes are generally located at 6-8" below ground, although Yerkes recommends somewhere around 2' below grade in order to protect the system – such an approach would be cost prohibitive. Yerkes also pointed out that they are unaware of any drip irrigation fields that are currently in use for recreation.

3. Vegetation

The vegetation within the Okehocking Preserve is a complex combination of woodland, meadow, and riparian areas. Areas of the Okehocking landscape were once used to grow crops for Quaker settlers and were thereafter utilized for cattle grazing, and the large clearings long in a fallow state are now meadows partly overrun with invasive species such as multiflora rose, thistle and aggressive vines. Described below are the types of vegetative species that exist on the site, including invasives that need management and control. It is hoped that this plant inventory will assist in coordinating management goals. Six vegetation categories are found within the preserve and are identified on Figure 9: mature woodland (approximately 10 acres), old-field woodland (approximately 25 acres), mid-successional woodland (approximately 25 acres), riparian restoration areas, hedgerows, and meadows (approximately 85 acres).

a) Pennsylvania Listed Rare Plant

Janet Ebert, a botanist who conducted a plant survey for Okehocking, reported a Pennsylvania rare plant *Rotala ramosior*, or Toothcup, which she describes as being located in a "seasonal pond/mudflat" as well as growing on the edge of an "old slough" which is defined as a muddy hollow in the ground (see Figure 3, Natural Features). Populations of this plant should be monitored. The greatest threat to this plant is the invasion of exotic species, particularly, according to Ebert, *Athraxon hispidus*, an alien grass approaching the edges of the mudflat population. Other invasives of concern include multiflora rose. Management of the Toothcup populations will focus on protecting them from these and other invasive species.

b) Mature Woodlands

Mature woodlands are found on Figure 9 in areas labeled 1. The mature woodlands buffer Ridley Creek on its southern edge, and are located in the northern area of the Preserve that is west of the Willistown Conservation Trust barn. The areas designated as mature woodland contain white oak, hickory, ash, and beech trees as the upper canopy. Lower canopy species are tulip poplars, walnut, and cherry trees. The understory in the northern mature woodlands is dominated by invasive Amur honeysuckle, Oriental bittersweet, Norway maple, and the native shrub spicebush. The southern mature woodlands along Ridley Creek have no understory once the vine and multiflora rose perimeter is penetrated. The absence of understory in this section is characteristic of deer over-browsing. Visible are thick vine stalks reaching into the canopy.

Mature woodlands are different from a forest mainly in the age of trees and diversity of plant and animal species. The history of deforestation for agricultural purposes in the Philadelphia region altered the landscape for generations. The woods within the Okehocking Preserve were at one time cleared land. A mature woodland will eventually become a forest, but only after remaining ecologically intact for many years (in excess of one hundred years). Human intervention and other disturbances often contribute to forest degradation.

In order for the mature woodlands within Okehocking Preserve to become a true forest, management of invasive species must occur. Such management will permit native saplings and understory species to grow unrestrained. Amur honeysuckle, mile-a-minute, and Oriental bittersweet are the dominant invasive species in the mature woodlands, and are particularly good at preventing the growth of saplings and reducing biodiversity within ecosystems. Invasive trees, such as Norway maple, are also present and need to be managed. Japanese stilt grass also exists along the trails.

The species most at risk in the mature woodlands are the tallest and oldest trees that are surrounded and infested with bittersweet vines. These trees take the longest to mature, and their size adds character to the woodlands. The immediate area surrounding the Willistown Conservation Trust barn is heavily infested and would be a good place to begin bittersweet vine control initiatives.

c) Old Field Woodlands

The old field woodlands in the Okehocking Preserve are between 15 and 25 years old. These areas, seen on Figure 9, Woodland Inventory, sections 2, are heavily infested with tree of heaven, multiflora rose, Russian olive, Japanese stiltgrass, honeysuckle, mile-a-minute and dominant Oriental bittersweet. Native tree species within these areas are walnut, beech, and black cheery. Existing trees are having trouble regenerating due to the smothering of saplings by the invasive understory species.

The same coverage of large tree species by Oriental bittersweet in the mature woodlands is also seen in the old field woodlands. The four old field woodland sections east of the northernmost spray irrigation treatment lagoon on Figure 9 are surrounded by mowed areas on at least three sides. The lack of contiguity between these ecosystems makes them highly vulnerable to invasions of aggressive vines such as Oriental bittersweet, mile-a-minute, and honeysuckle. These vines aim to achieve the most sunlight possible, and will grow atop existing species to acquire more light.

A lack of contiguity and mowing of perimeter areas increases light exposure to these small enclaves. In these areas the vines have formed a thick mat that runs above trees and shrubs, successfully shading out native understory and toppling over full grown trees in several areas. In some riparian locations along Delchester Run the vines form a canopy that reaches from one side of the bank to the other. The predation of large trees by Oriental bittersweet vines creates a positive feedback loop for the vines. With every tree that is smothered and pulled over, the empty place in the tree canopy allows for more light for the vines and hence more growth.

Small patches of purple loosestrife can also be seen along Delchester Run, which passes through part of the old field woodlands. Purple loosestrife is a highly invasive plant that favors areas with high soil moisture content and inundation. This plant must be removed immediately while the population is low.

d) Mid-Successional Woodlands

Mid-successional woodlands were at one time agricultural land, but have existed longer in their current form than old field woodlands (and are younger than mature woodlands). The mid-successional woodlands within the Preserve are located in the sections labeled 3 on Figure 9. Native tree species in the successional woodlands are tulip poplar, black cherry, red maple, white and red oak, beech, and hickory.

There are two locations of mid-successional woodlands in the Preserve located in the western and eastern edges. The small western section near the Willistown Conservation Trust barn is heavily overgrown with Oriental bittersweet vines. Most large trees are covered, and several have been pulled over. The vines form a thick mat over most species in this area.

The eastern mid-successional woodlands are much larger than the western area. This area has severe infestation with invasive vines specifically along Delchester Run. The remaining mid-successional woodlands that are not along the Delchester Run riparian area do not have a predominant presence of vines. Tall healthy trees are found in this area, although deer over-browsing has reduced the understory.

Invasive species within the mid-successional woodland areas are abundant at the perimeter. The edges and remaining understory of these woodlands are covered with mile – a – minute, honeysuckle, Oriental bittersweet, and Japanese stiltgrass. Large autumn olive trees and tree of heaven species are also predominant invasives along the woodlands/meadow interface.

e) Riparian Restoration Areas

Healthy riparian buffers are important to the water quality of Delchester Run, Ridley Creek and the watershed as a whole. Buffers have many benefits including filtering and reducing the amount of sediment and nutrients in runoff, lowering water temperature, and providing flood control. Riparian buffer restoration efforts were initiated for watershed improvement and protection.

The first riparian restoration project at Okehocking was executed by Chester-Ridley-Crum Watersheds Association and Willistown Conservation Trust over 4 years ago. Saplings and shrubs were added to this planting in May of 2005 alongside the central driveway of the park and the main stem of Ridley Creek. Three years ago two Conservation Reserve Enhancement Program (CREP) project areas - one along the Ridley Creek and one beside Delchester Run, were installed with funding from the Farm Service Agency and guidance from the Natural Resource Conservation Service. Through the involvement of community volunteers over four hundred saplings were planted in the CREP riparian restoration zones.

Although many new saplings and shrubs were planted, the overall survival in the CREP areas after three years is very low. The Natural Resources Conservation Service (NRCS) estimated an average of 96.5% failure rate. The native tree and shrub species did not survive mainly due to buck rubbing and deer browsing because a wood stake and fishing line deterrent/tree protection system was ineffective. New practices must be used to protect future restoration plantings from deer (such as the use of tree tubes as endorsed by NRCS), and each project must have a follow up management and maintenance plan prior to execution. See Figure 9 for priority riparian buffer project areas.

Currently the majority of the riparian restoration areas are overrun with invasive Canada thistle, Japanese stiltgrass, tree of heaven, Oriental bittersweet, multiflora rose, autumn olive, and honeysuckle. Native trees and understory are completely covered from roots to canopy in Oriental bittersweet vines in the majority of the existing riparian buffer areas. Purple loosestrife was also seen, in small quantity along Delchester Run and the main stem of Ridley Creek by the Mill Race and dam. A significant population exists on the west side of the Ridley in the floodplain near the dam. This plant needs to be removed as soon as possible before it spreads to other water laden areas within the Preserve.

f) Hedgerows

Hedgerows within the Okehocking Preserve are both beneficial and detrimental. Positive aspects of hedgerows are erosion control, wildlife cover, and scenic framing of landscapes. On the other hand, hedgerows can be detrimental to the Preserve in their

ability to act as seed banks for invasive species and hiding places for birds of prey.

The plant composition of hedgerows within the Okehocking Preserve is dominantly multiflora rose, Japanese stiltgrass, Oriental bittersweet, honeysuckle, tree of heaven, and mile–a–minute. Consideration should be given to removing these hedgerows in order to reduce the abundance of invasive species within the Preserve.

g) Meadows

The Okehocking Preserve has three different objectives for its various meadows: certain areas are to be established and maintained as native grass meadow, recreational meadow, and spray irrigation meadow.

In the center of the Preserve are the designated low-impact recreation meadows, as seen on Figure 8, Meadow Inventory, sections 1a, 1b, and 1c. The present goal of these meadows is to provide low-impact recreation and wildlife habitat. The long term goal is to establish them as native grass and wildflower meadows. In addition, the area along Delchester Run is intended for riparian restoration. A part of a migratory bird corridor and larger open space network, these meadows have the capability of providing habitat for migrating bird species and other meadow wildlife. It is unclear at this point whether these meadows will contribute appreciably to grassland bird habitat given their size, the other intended uses for these meadows, and the intent to establish a riparian buffer area along Delchester Run. Undertaking seasonal bird counts over several years may help to determine whether birds are making meaningful use of these meadows.

The recreation meadow section of the Preserve is located along the southern bend of Ridley Creek. The recreation meadow is divided into two sections, 3a and 3b on Figure 8. Many plant and animal species utilize wetland areas for habitat and section 3b will be managed to protect and ultimately restore the riparian buffer along Ridley Creek. Currently section 3 has undergone two herbicide treatments and seeding with warm season native grass and wildflower species. Unfortunately, section 3a currently contains a significant thistle population which will necessitate additional herbicide applications and/or earlier yearly mowing (in June). Given that this meadow will be used for Township recreational purposes, defining and installing an appropriate grassland seed mix that will accommodate the recreation in section 3a should be considered and defining and installing a seed mix for restoring the riparian area in section 3b should be a priority. In addition, section 3b contains multiflora rose and purple loosestrife, both of which compromise the overall health of the riparian area. Over time, the invasives should be removed and this area enhanced with native grasses and riparian trees and shrubs.

Portions of meadows 1a and 1c are identified as riparian restoration priority area 2 on Figure 8 and will be reforested to link the forested land south of Delchester Run with the forested land north of Ridley Creek. Reforestation will provide useful habitat to birds and wildlife, promote reforestation regionally, reduce mowing needs, and have greater ground water recharge capabilities than meadowland. In the meantime, grass meadows with specific mowing schedules and the removal of hedgerows will provide additional open contiguous habitat, and open views for visitors from these sections of the Preserve. There is currently invasive Canada thistle, autumn olive, and multiflora rose that grow throughout the meadows. The mowing regimen established can be used to control invasive plants in the meadows and prevent the spread of seeds from the meadows to the remainder of the park. The goal of the Township is to mow the meadows no more than once per year.

The third type of meadow found within Okehocking Preserve is irrigated with treated sewage wastewater from Penn's Preserve, a development south of the Preserve. Two treatment lagoons within the Preserve supply the irrigation system in this meadow (see Figure 9, Woodland Inventory section 2a and 2b). Canary reed grass is grown in this location because of the grass' ability to absorb high levels of nitrogen and other nutrients. The spray irrigation meadow is mowed, and clippings are removed to remove the high nitrogen content and allow new growth for further nutrient absorption. Optimally, the spray fields will be mown every third month beginning in April and ending in late October. Spray irrigation allows for water reuse, water cleansing, and ground water recharge.

h) Invasive Vegetation

Exotic, invasive species can impact ecosystem processes and structure most dramatically where they utilize or acquire resources in a substantially different way than natives and thereby out-compete or make unsuitable native habitat. Rare species are most highly threatened by invasion of exotics, but more common species may also be vulnerable to competition or hybridization, which could have negative effects on the community ecology.

Human disturbance and dispersal are two major causes of invasion. These actions allow the characteristics of the invaders to reach their full potential. Non-native plants have the capacity to severely degrade biological communities by altering ecosystem processes. According to a Nature Conservancy report, exotics are at least partly responsible for the decline of 42% of threatened and endangered species in the United States, and are the primary factor in the decline of 18% of these species. In addition, biological invasions as a whole may have greater impact on biodiversity than phenomena such as rising CO2 concentrations and climate change. Once introduced, invasive organisms have the capacity to spread on their own.

The addition of invasive species and the reduction in number of native plants can affect both the structure and function of biological communities. Impacts may include excluding native plant species by crowding for space, competing for nutrients, moisture and other resources, or exhibiting other allelopathic qualities that make conditions unsuitable for natives. The loss of native plants and the proliferation of exotics can often lead to a loss of cover, food sources, nesting sites and other uses by native fauna. This, in turn, can create a positive feedback loop for invading weeds. A monoculture of weeds tends to destabilize a community, making it more prone to disruptive disturbances.

In some cases, soil erosion may increase, especially where grasses have been replaced by sparser shrubby plants. This, in turn, may effect the hydrologic cycles of the community by allowing greater runoff and less moisture retention.

Soil chemistry and nutrient cycling can also be affected by certain characteristics of weeds. Plant litter can have chemical compounds that leech into the soil and inhibit germination or growth of natives.

The Okehocking Preserve is severely over-run by a medley of invasive grasses, vines, and shrubs. Below are the descriptions of specific invasive species present in the Preserve in high numbers.

i. Amur Honeysuckle

Amur honeysuckle (*Lonicera maackii)* is a deciduous multi-stemmed shrub with multi-colored flowers and berries that last into the winter. Honeysuckle forms a dense understory, and was once broadly planted across the country for erosion control. The shrub can consume faster than native plants sunlight, water, and nutrients. Amur honeysuckle also possesses a fruit that is a favorite among birds and mammals alike who spread seeds throughout the forest. The fruit of the honeysuckle plant is favored by animals although it lacks the fat and protein content of more nutritious native species. Although the plant is pleasingly fragrant, the aroma of honeysuckle plants attracts pollinators from other flowering species, therefore decreasing the reproductive capacity and later seed dispersal of native flowering plants. Physical removal of bushes and new growth, along with chemical treatment by herbicides is suggested for the eradication of honeysuckle from property.

ii. Norway Maple

Norway maple (*Acer platanoides)* was once planted in urbanized areas and across the United States for its pollution tolerance and shade creation. Norway maples have a shallow root system that does not allow plants with deep root systems to grow anywhere near the trees, effectively clearing space for more Norway maples. Young trees can also shade out native understory and reach heights that will shade out other mature tree species in the forest canopy. Seeds are dispersed by winged samaras common to all maple trees. The presence of this invasive will decrease the diversity of native understory and canopy species. Norway maples are easily differentiated from other trees in the maple family due to the milky sap that can be seen when a petiole, or leaf stem, is snapped. In order to control the growth of Norway maple trees chemical treatment and physical removal is endorsed by the National Park Service.

iii. Multiflora Rose

Multiflora rose (*Rosa multiflora)*, is a common invasive in Pennsylvania and the Eastern United States. Within the Okehocking Preserve, multiflora rose is found in the hedgerows, meadows, established successional woodlands, old field woodlands, and areas of the mature woodlands. Once planted to control erosion and create natural livestock barriers, the proliferation of multiflora rose quickly decreased its desirability. The best way to control this invasive is to cut the plants late in the growing season and then apply herbicide to the stump. The seeds of multiflora rose however have been known to last up to twenty years, so removal requires significant effort.

iv. Russian Olive and Autumn Olive

Nitrogen fixing Russian olive (*Elaegnus angustifolia*) and autumn olive (*Elaegnus umbellata*) are both found in the Okehocking Preserve. Russian olive and autumn olive can be differentiated by the thorns and silver scaly leafs of Russian olive. This shrub can reach up to twenty feet in height, regenerates quickly after fire and cutting, and produces a bounty of fruit favored by birds. The invasive olive species can quickly out compete native plants for water and can grow in almost any soil given their nitrogen fixing capabilities. The best control methods for Russian olive and autumn olive are physical removal. Any sort of cutting will induce the plant to sprout, so existing plants need to be pulled out of the ground.

v. Oriental Bittersweet

The aggressive vine Oriental bittersweet (*Celastrus orbiculatus*) is found in the old field woodlands. Oriental bittersweet can be easily confused with native bittersweet (*Celastrus scandens*) because the native vine flowers at the ends of the plant, and the

invasive vine flowers along the stem of the plant. Oriental bittersweet must be managed because it can smother native understory and tree saplings due to rapid growth. This vine reproduces through seed, root shoots, rhizomes, and above-ground expansion. In order to successfully remove Oriental bittersweet, the plant must be physically removed and the remainder must be treated with herbicide.

vi. Mile –A–Minute Weed

Mile–a–minute weed (*Polygonum perfoliatum*) is an invasive vine originally from Eastern Asia. This vine has the ability to spread quickly and over any plant due to backward facing barbs on its stem and leaf undersides. The leaves of this vine are alternate equilateral triangles. Mile–a–minute vines have a high light preference and so smother native plants to attain light, therefore denying natives adequate light to photosynthesize. The vines also produce flowers and fruit favored by birds. Black seeds within the fruit are easily dispersed by birds, and their ability to remain buoyant for over a week in water spreads mile–a–minute throughout watersheds.

The removal of mile–a–minute weed requires physical methods and landscape restoration. Vines can be pulled out from the ground with the use of thick gloves to protect against the sharp barbs. The physical removal of vines should begin before seed germination, and locations should be checked for new growth until early April and July when the germination period is over. Thick riparian buffers, unbroken hedgerows and woodland edges will reduce the large light pockets that attract mile–a–minute weed. Broad vegetative buffers in these areas will shade out the initial dispersal of the vine, and also reduce its ability to reach streams and creeks where the seeds can be spread downstream.

vii. Canada Thistle

Canada thistle (*Cirsium arrense)* is unique from other thistles in the lack of spines along the stem. Okehocking preserve has a large population of Canada thistle throughout the meadow areas and along mowed trail and woodland edges. The best way to reduce Canada thistle is to stress the plant in order to deplete nutrients stored in the root system. The thistle flowers and spreads from a large taproot three feet below the soil surface. Continuous mowing of plants before seeds disperse will force new plants to grow from the root, depleting the supply of stored nutrients. Over time, stress will kill the large root system that supports infestations of Canada thistle. If the thistle is not surrounded by desired plants, than the broad application of systemic herbicides will travel to the root system and kill the plant.

viii. Tree of Heaven

Tree of heaven, or Chinese sumac (*Ailanthus altissima),* is a deciduous tree often found along roadside corridors and other areas with disturbed vegetation patterns. Within the Okehocking Preserve tree of heaven is found in every woodland, riparian, and hedgerow area. Tree of heaven can be distinguished from native sumac and ash by its bad odor likened to cashews, and large teeth at the end of a long smooth leaf. Tree of heaven is difficult to remove because it produces a large volume of seeds that germinate quickly and has an aggressive taproot system. Herbicide is the best removal option. The large root system must be killed or the plant will grow back quickly. Physical cutting can help reduce the production of seeds, but systemic herbicides will ensure the deep roots are no longer alive.

viv. Japanese Stiltgrass

Japanese stiltgrass (*Microstegium vimineum)* has long slender asymmetrical leaves and produces small purple flowers that jut from the end of the plant in the late summer early fall. Stiltgrass can out compete native grasses due to a high seed production and germination rate. White tail deer do not eat stiltgrass, and this selective browsing further puts native grasses at a disadvantage. Individual stiltgrass plants produce 100 to 1,000 seeds that disperse locally and can stay viable in the soil bank for five years. Japanese stiltgrass can be mowed, pulled, and chemically treated in order to remove an infestation. Mowing the grass and pulling it should occur around late September to reduce the likelihood that seeds stored in the disturbed soil will germinate.

x. Purple Loosestrife

Purple loosestrife (*Lythrum salicaria)* is one of the most notorious invasive wetland species in the country. Purple loosestrife is found in small populations within the Okehocking Preserve along the riparian corridors of Ridley Creek and Delchester Run and one significant population is located on the west side of the Ridley near the dam. The species should be removed as soon as possible.

Purple loosestrife adapts quickly in disturbed wetlands where is out competes native hydrophilic vegetation, grasses, and sedges reducing diversity. One plant can have up to fifty stems that originate from a single rootstock. Loosestrife stems reach from four to ten feet tall and have purple flowers along the top end for the length of the summer. Removal of purple loosestrife requires physical cutting and herbicide application to destroy the root.

xi. Common Reed or Phragmites

Phragmites (*Phragmites communis)* is a highly invasive herbaceous grass/reed that spreads at an incredible rate. In sparse stands of the grass, shoots that fall over become horizontal runners. Shoots and rhizomes grow from the nodes, spreading the plant far beyond its original bounds. The plant is associated with moist conditions, often invading other native plant colonies in wetlands and low lying areas and displacing native plants that provide better wildlife food and cover. Its extensive root system holds dormant reeds in place during the winter, which causes a fire hazard.

In the Okehocking Preserve, a small patch of phragmites is located to the west of the sewage treatment building along the hedgerow. It will be important to remove this reed as soon as possible to prevent spreading.

Updated information and management methods for invasive weeds can be found at:

1. Colorado Natural Areas Program, Colorado Department of Natural Resources: *Creating an Integrated Weed Management Plan: A Handbook for Owners and Managers of Lands with Natural Values: http://parks.state.co.us/cnap/IWM_handbook/IWM_index.htm*
2. The Department of Conservation and Natural Resources (DCNR) Abstracts: http://www.dcnr.state.pa.us/forestry/wildplant/invasive.aspx
3. DCNR Invasive Tutorial: http://www.dcnr.state.pa.us/forestry/invasivetutorial/index.htm
4. National Park Service Abstracts: http://www.nps.gov/plants/alien/index.htm.
5. The Nature Conservancy *Wildlands Invasive Species Program* Abstracts: http://tncweeds.ucdavis.edu/esadocs (See Appendix 3 for sample).
6. Appendix 5 in this document: Invasive Plant Management Timeline from Delaware RiverKeeper Network (215-369-1188), and the Invasive Species Checklist.

7. United States Geologic Service: http://www.usgs.gov/ - go to the Library Homepage
8. Penn State University Weed Management Abstracts: http://weeds.cas.psu.edu/

4. Wildlife

a) Mammals

While no formal inventory has been undertaken on the Preserve, several observations have been made regarding mammal use. Mammals sighted include: deer, muskrats, groundhogs, red foxes, rabbits, and raccoons. Coyote prints have been identified and these animals are likely traveling from Ridley Creek State Park along the Ridley Creek Greenway. Judging from the habitat on the Preserve, it can be assumed that mammals commonly found in the area also include, opossums, skunks, mice, weasels, and voles.

The main concern regarding the mammal population within the Okehocking Preserve is the abundance of deer. Over browsing by deer is known to reduce native understory diversity and encourage the growth of invasive species.

The deer population on the 155 acre Preserve should be maintained in a flux between 5 and 15 deer. The PA Game Commission's optimum number for a sustained healthy forest ecosystem is 21 deer per square mile. Following this guideline, Okehocking should have roughly 5 deer, or 1 deer per 30 acres. Ultimately, the number of deer should be the number that will not diminish the quality of the native natural resources on the Preserve. As such, it is estimated that between 5 and 15 deer could be accommodated on the Preserve; in order to verify this however, browse damage surveys should be conducted regularly to determine the extent of damage and recommendations should be adjusted accordingly. Deer management is critical to achieving the goal of a healthy native ecological community in Okehocking Preserve, as well as maintaining a healthy deer herd. Okehocking Preserve deer management is conducted by Delchester Conservation Group (DCG), a preservation and management organization. (See Appendix 6 for 2005 DCG Deer Management Report). In the future, consideration should be given to coordinating hunting dates among neighboring property owners (the Willistown Conservation Trust has offered to assist with this coordination).

b) Birds

A formal bird census has been ongoing at Okehocking since 2001, undertaken by the Valley Forge chapter of the Audubon Society. Presently, the number of species counted on the Preserve is 133 (See Bird Census in Appendix 4). In 2003, Okehocking, along with the majority of open lands in the Township, was designated as being located within the Upper Ridley/Crum Important Bird Area (IBA #72) by the Pennsylvania Audubon Society. In the spring and summer of 2004, Upper Main Line YMCA Environmental Education and Ornithology Instructor Trevor Conlow conducted bird observations. (See Bird Observations in Appendix 4).

The Important Bird Area (IBA) program was established to reverse declining trends in bird population. An IBA is a site that is part of a global network of places recognized for their outstanding value to bird conservation. The IBA program developed from a need for a centralized source of information on important bird habitat, first in Europe, then the Middle East, and now in the United States. Although BirdLife International, a conservation group in Europe, developed the basic IBA program, the National Audubon Society was the first organization to develop it in the United States.

The Upper Ridley and Crum Creek watersheds of Willistown Township and adjoining areas in East Goshen, Newtown, Edgmont, and Easttown Townships and Malvern Borough have important characteristics to promote bird conservation and public education. These include over 25 years of active conservation in the community, good land management practices, several areas of public access like Okehocking Preserve, a diversity of habitat, close proximity to a large population base, existing populations of rare, threatened, and declining (statewide) birds, and a historical record of birds sighted in the area. Local threatened species include the Eastern Meadowlark, the Bobolink, and many neo-tropical migratory species, some of which have been sighted at Okehocking **(See Attachment---**, Audubon Bird Census). For these reasons, the original IBA #72 which included the 3,300 acres of Ridley Creek State Park and Tyler Arboretum, was expanded to include approximately 10,000 acres in Willistown Township and surrounding municipalities.

Okehocking's variety of bird habitats include: various stages of woodland from old field to mature woodlands, open grasslands, wetlands, hedgerows, creeks and spray ponds. Bluebird boxes have also been placed in the Preserve and are currently being maintained by the Delaware County Bird Club. Delchester Conservation Group coordinated the installation of 7 wood duck boxes along the main stem of the Ridley.

Grassland birds such as eastern meadowlark, Savannah sparrow, and bobolink have declined drastically in southeastern Pennsylvania in recent decades. This decline is predominantly due to a change in agricultural practices as well as a loss of habitat. Farmers are mowing and haying earlier in the year, which coincides with the nesting period of these birds. Delaying mowing until after July 15 gives grassland and song birds the chance to fledge their young. Delayed mowing also promotes the emergence of native warm season grasses, such as switchgrass and little blue stem. Although the Township has been advised that the meadows on Okehocking Preserve are too small and the surrounding landscape is not conducive to attracting grassland birds, the Okehocking meadows should be monitored and sightings documented for all bird life including songbirds, and mowing schedules should consider nesting times of birds that utilize the Preserve.

Birds that use interior woodlands have also been declining throughout the area. This decline is due in part to the simplification of the structure of woodlands caused by overgrazing of deer, and the invasion of exotic plant species, which together can inhibit successional pathways. The result is a lack of diverse shrub and mid-level tree layer, which many birds depend on for nesting and feeding. Deer and invasive species management along with planting native trees and shrubs through time will restore bird habitat to its fullest potential and hopefully attract birders year round to the Okehocking Preserve. Improved and increased wooded areas at Okehocking will add to the existing extensive woodland habitat at Ridley Creek State Park (currently approximately 1500 acres are in woodland at the park).

One consideration for management is the need to monitor for species such as cow birds and starlings; such birds typically drive other birds away and reduce habitat diversity.

c) Reptiles and Amphibians

Okehocking Preserve possesses mud flats, moist areas and suspected vernal pools that are a favorite habitat of both reptiles and amphibians. Riparian areas along Ridley Creek are ideal habitats, as are moist forest floors within the variety of woodlands. A list of reptile

and amphibian species can be found in Appendix 2.

5. Scenic resources

The scenic resource inventory was undertaken using the same methodology used by the Township in its "Open Space, Recreation, and Environmental Resources Plan." In essence, the visual inventory documents significant lands in the public viewshed; included are vista points, visual accents and intrusions. Unlike the Township's open space plan (which inventoried views from public roads), this inventory assessed views both into and out of the Preserve. The logic of this approach is quite simple – a public space should be inventoried from whatever viewpoint the observer takes.

Vista points designate broad, expansive views. Visual accents are those objects or structures (natural or manmade) that enhance or contribute to the scenic landscape. Visual intrusions are those manmade objects or structures that detract from the landscape. Examples of accents are stone walls, open fields, and historic structures. Intrusions include such items as transformer facilities or trash.

Figure 5, Scenic Resources, attempts to quantify and graphically depict the visual landscape of the Preserve, seen both into and from within the site. In all, six accents and four intrusions were identified. These are:

Accents

1. Barn in extensive vista
2. Partial view – wetlands & barn
3. Open field accent
4. Historic house & barn
5. Open field accent
6. Woodlands (obstructed view)

Intrusions

A. Army Natl. Guard Bldg.
B. Sheet metal pole barn
C. Multi-family housing
D. Sewage treatment pond

6. Historic Resources

a) Land History

Okehocking Preserve constitutes 155 acres of the 500-acre land grant from William Penn to the Okehocking band of the Lenni Lenape Indians, the first Native American land grant in the American colonies. In 1993, the 500 acres were added to the National Register of Historic Places as the Okehocking Historic District. The Historic District stretches from between Dutton Mill and Garrett Mill roads towards its eastern boundary on Plumsock road, and is flanked to the north by Goshen Road and to the south by Route 3.

b) Historic Resources

In addition to the history of the landscape, six historic resources were inventoried on the Preserve, including: the Garrett House, the Garrett Barn, the Ice Dam and Mill Race, the Golder's Barn (owned by Willistown Conservation Trust), Springhouse Ruins, and Golder's Ruins (see Figure 6, Historic Resources). Following are brief histories and descriptions of these resources.

i. Aaron Garrett, Jr house – This house, built in 1802 (date stone has his & wife Jane's initials on western gable) is a 2 ½ story fieldstone Penn plan house; a 2 ½

story fieldstone addition was built in the mid 19th century with curved jams. The house was recently renovated, and is currently occupied by a tenant who keeps an eye on the Preserve and reports unusual or improper activities to the Township or police.

ii. Garrett Barn – This barn, within close proximity to the Garrett house, is a bank barn with framed gables; the barn was built in the early 19th century but is in very poor condition. Restoration was considered but proved to be financially infeasible. The Township recently decided to dismantle the structure because it is unstable and causes safety concerns. The foundation may at some point be stabilized and plaques placed nearby to recognize the historic structure.

iii. Ice Dam and Mill Race – The existing structure is not original to the property but most likely replaced the one built by Aaron Garrett in 1802. Garrett used the structure as a bark mill and tannery and his family continued operations until 1841. Tree bark was used in the leather tanning process; the associated logs were released downstream for processing at the Quaker Lane Saw Mill. Local historians believe an archeological dig at this site would yield numerous artifacts.

iv. Golder's Barn – This restored fieldstone barn was originally built by John Briggs, circa 1775. The structure contains conical stone columns that once supported an extended open forebay. A straw shed is attached to the east gable. This structure is owned and was restored by the Willistown Conservation Trust (WCT) several years ago. Currently, the barn has been restored as such and does not have a certificate of occupancy for holding events. The long-term goal of the Trust is to have educational programs and fund-raising events there. They have expressed an interest in coordinating with the Township on these programs.

v. Springhouse Ruins – Little is known of these ruins other than that they served as a spring house. Built in approximately 1765, it is likely the structure was used by the Briggs family and successive property owners/tenants. The Willistown Conservation Trust owns these ruins.

vi. Golder's Ruins – Little is known of these ruins other than that they are fairly recent in origin, having been built in the 20th century. It is believed that the structure served as a "hunting box," a place where people would come from the city to foxhunt at the local Radnor Hunt.

7. Trails

The trail system in the Okehocking Preserve takes visitors through meadows, woodlands, and historical areas and contains an interconnected web of mowed or cleared trails for every age and fitness level (see Figure 7, Trails and Recreational Use). Trail access is afforded visitors from the Delchester Road and Route 3 entrances to the Preserve. Trails in the Garrett Mill field can be accessed by parking at Garrett Mill Park and crossing Garrett Mill Road.

The trail located in the northeastern corner of the park where the trail head can be accessed from the parking lot on Delchester Road permits dogs off leash for three quarters of a mile around the fenced meadow set aside for water reclamation. The surface of this trail is mowed grass. Dogs are required to be on leashes throughout the remainder of the Preserve.

Trails weave through the central and northwestern parts of Okehocking Preserve through open meadows, old fields and woodlands. All of these habitats offer scenic views and wildlife sightings The trails also pass by and give long views of the historic structures of the Preserve. Visitors can sit and relax at a picnic table or in the shade and view the restored historic Quaker barn (Golder's Barn), owned by Willistown Conservation Trust.

The Southwestern corner of Okehocking Preserve is isolated from the remainder of the park due to Ridley Creek transecting the property. A connective bridge crossing the main stem of the Ridley and connecting these two pieces of the Preserve is a long term recreational goal. Currently, a mown trail loop through the field meadow can be accessed by parking at Garrett Mill Park and crossing Garrett Mill Road.

OKEHOCKING PRESERVE MANAGEMENT PLAN

SECTION IV

Preserve Management and Maintenance—Goals, Objectives and Implementation Strategies

SECTION IV
PRESERVE MANAGEMENT AND MAINTENANCE—GOALS, OBJECTIVES AND IMPLEMENTATION STRATEGIES

This section identifies management and maintenance strategies for the long-term protection and enhancement of the Okehocking Preserve. Addressed are management goals for a Partnership Network, Natural Resources, Recreation, Education, Historic Resources, Agriculture, and Security. Where appropriate, management objectives are delineated and specific implementation strategies are described. This section concludes with a description of Preserve Maintenance Issues and Improvements that directly reflect resource management goals and objectives. Appendix 5 contains spreadsheets for Maintenance and Management Activities, as well as an Invasive Species Check list, an Invasive Plant Management Timeline, and a Priority Improvement Projects List.

The primary mission of the Preserve is to provide for recreational use and resource protection (natural, scenic and historic). To this end, high priority must be given to invasive plant management and deer management as the Preserve is inundated with both.

Important to consider for all future actions on this site are the requirements and restrictions imposed by the Conservation Easement and Declaration of Restrictive Covenants granted by Willistown Township to the Willistown Conservation Trust (WCT) (original easement document dated 13, August, 2001, extension and amendment document dated 30 October, 2003), as well as those restrictions implicit in grant funding received from Chester County and the Pennsylvania Department of Conservation and Natural Resources (DCNR). Every effort has been made to incorporate the principles of the easement documents and covenants and restrictions into the resource management goals contained herein; in any event, the Township will notify the WCT of implementation project activities (and will provide copies of this plan to WCT) and the Okehocking acquisition project managers at Chester County and DCNR.

Many of the management goals are interwoven. Operating the Preserve most efficiently will lead to accomplishing many of the management goals at one time. This approach is the foundation for the plan to construct an environmental/nature center at the Garret Barn site. Such a facility has wide reaching potential to accomplish Partnership Network, Natural Resource, Recreation, Education, Historic Resource and Agricultural goals and objectives for the property.

A. Partnership Network Management

Critical to the management, improvement and programming for the natural resource, recreation and education components of Okehocking Preserve is continued coordination with partner organizations.

Goal 1: Maintain relationships with current partners and coordinate project commitment implementation. Following is a list of organizations and their commitments to working on such initiatives at Okehocking Preserve.

1. Boy Scouts of America, Malvern Troup 7
   a. Contact: Jeff McQuiston, Troup Master
   b. 610-644-5100
   c. The Troup is “adopting” the Preserve as a management and improvement project area for their Scouts. In adopting the Preserve, the Troup will coordinate Eagle Scout projects and will provide one clean up day per year for the next three years at Okehocking Preserve. (One Eagle Scout project is underway: a board walk and stream crossing, and one has been completed: a

trail creation.)

2. Boy Scouts of America, Willistown Troup 78
   a. Contact: Steve D'Antonio
   b. 215-580-7963
   c. Same "adoption" concept as Troup 7 above. Looking to do additional Eagle Scout projects well into the future. (Have built a bridge over Delchester Run, and have built woodland deer exclosure.)

3. Chester-Ridley-Crum Watersheds Association
   a. Contact: Anne Murphy, Executive Director
   b. 610-892-8731
   c. CRC will continue to partner with the Township on restoration projects and share watershed protection and restoration information. (Have executed a 900' riparian buffer restoration project and follow up maintenance in 2005.)

4. DCNR – Ridley Creek State Park
   a. Contact: Roger McChesney, Park Manager 610-892-3900
   b. Included Willistown Township as an important partner in the Ridley Creek State Park Management Plan, and are committed to coordinating on management plan practices and exchanging management and ecological information for both ecological and recreational benefits between the Park and the Preserve.

5. Delchester Conservation Group
   a. Contact: Michael Siddons, President
   b. 484-614-6546
   c. Currently the Township has renewed agreement for deer management practices focusing on population control at Okehocking through September 2006. Have conducted deer management since September 2004. Are committed to assisting with management and implementation projects at the Preserve well into the future. Have built and installed wood duck boxes and are assisting with coordinating and implementing an invasive management project.

6. Great Valley School District
   a. Contact: David Morgan, Assistant Superintendent for Curriculum and Instruction
   b. 610-889-2125
   c. Will develop a series of education field trips with Willistown Township as part of the district's K-12 science and social studies curriculum. The district partnership coordinator and curriculum director will work to define specific instructional units tied to field trip visits to Okehocking Preserve. Teams of district teachers will write specific instructional materials for each defined field trip. District videos will be developed to accompany each field trip project.

7. Red Willow Education Center, Inc.
   a. Contact: Sarah Hetznecker-Sheehan, Executive Director
   b. 610-647-0958

c. Will coordinate events at Okehocking Preserve to promote education about Native American traditions. Will guide workshops and traditional ceremonies for local residents, and will include elders from Native American Tribes in celebrating land conservation and Native culture. Red Willow and Willistown Township will hold another traditional powwow in Fall of 2006 with intentions of holding annual powwows in the future. (Three prior ceremonies: one blessing the land at the Preserve opening Oct 5, 2002; traditional Native American Powwow Sept. 24, 2004; traditional Native American Powwow, Sept. 24 & 25, 2005)

8. Upper Main Line YMCA
   a. Contact: Brian Raicich, Director of Environmental Education and Youth
   b. 610-647-9622
   c. Over the next three years: YMCA Environmental Education Center will assist with special events (as scheduled each year), lead one bird walk per year, conduct 10 breeding bird counts each spring and summer, conduct one annual nocturnal wildlife inventory each spring/summer, and will develop summer camp environmental education programming to be conducted at Okehocking to begin in summer 2006. Earth Service Corps program (middle and high school students) will collect data through wildlife studies at the Preserve. The YMCA has expressed a desire to extend partnership beyond the 3 year period. (Have previously assisted in riparian buffer restoration projects, conducted bird inventories and held a nocturnal wildlife inventory.)

9. Valley Forge Trout Unlimited
   a. Contact: Pete Goodman, President
   b. 610-827-7619
   c. Will help to lead conservation and educational events on the Preserve regarding environmental matters and the value of clean cold water. (One previous exhibition – fly tying, Oct. 5, 2002.)

10. Valley Forge Audubon Society
   a. Contact: Edie Parnum, Ornithology Chair
   b. 610-647-3688
   c. Committed to continuing the bird census and leading at least one bird walk per year for at least 3 years. (Previous activity: bird census for 3 years, instrumental in its designation as an IBA along with Ridley Creek State Park, conducted bird walks.)

11. Willistown Area Trails Association
   a. Contact: Lance Taylor, Vice President, Landowner Relations
   b. 610-529-1771
   c. Committed volunteers and equipment for at least one day per year for at least three years for trail maintenance and/or creation in ways that are consistent with responsible and sustainable use of the land. Commitment will continue as long as the property is accessible to horse and riders. (Assisted in trail clearing prior to Preserve opening; will continue to do so.)

12. Willistown Conservation Trust
   a. Contact: Alex Van Alen, Land and Easement Stewardship Manager
   b. 610-325-8098

c. Over the next 2 years will lead a nature walk and help coordinate volunteers for one restoration project, at a minimum.

13. Willistown Township Environmental Advisory Council (EAC)
a. Contact: Mary McLoughlin, Township EAC Board Liaison
b. 610-640-1669
c. Contact: Brian Raicich, Chairman
d. 610-647-9622
e. One of the mandates of the EAC is to coordinate with the Director of Parks and Preserves to conduct and assist in educational, restoration and management initiatives and projects at Okehocking Preserve.

Goal 2: Expand upon current partnership commitments and bring new partner organizations into the Okehocking network.

It is desirable to encourage the good works of the partners listed above and manage their efforts so as to achieve their full potential. The Township fully believes success in these ventures will instill the desire to do more at the Preserve. Partners with established records of achievement will want to capitalize on their past success and will propose new and varied projects and programs that will benefit the community at large. The Township intends to actively promote and encourage the efforts of its partners in the years to come and seek out additional partners for the Preserve's network. The Township Environmental Advisory Council will play a significant role in assisting the Director of Parks and Preserves in implementing the goals and objectives of this plan.

B. Natural Resources Management

Goal 1: Establish routine monitoring practices that ensure water quality, stream health, woodland protection, and wildlife diversity within the Preserve.

Objective 1: *Monitor water quality, stream bank stability, and erosion of Ridley Creek and Delchester Run; monitor the wells at the Garrett House and inventory/monitor the wells above the Springhouse Ruins.*

Consideration should be given to establishing a volunteer or contracted stream monitoring program within the Preserve; included are physical, chemical, and biological monitoring. Physical monitoring would involve periodic field investigations of the stream to assess physical changes, erosion problems, bank stability, etc. Chemical monitoring would involve the establishment of monitoring stations (presumably one on the Ridley main stem and one on the Delchester Run tributary) within the Preserve. Such monitoring can be developed as a volunteer program with accompanied training, undertaken with a watershed partner organization such as Chester-Ridley-Crum Watersheds Association, in conjunction with a local high school biology class, or under contract with a professional environmental sciences firm.

Stream bank failure and erosion are key signs of poor water stewardship, either from within the Preserve or from upstream locations. Regular checks of stream bank health will allow adjustments and notifications to be made before water quality and biological stream health are impacted. Monitoring efforts should be coordinated with local organizations including the Chester County Conservation District, the Ridley Creek Watershed Partnership and the Chester-Ridley-Crum Watersheds Association.

Routine biological monitoring of aquatic resources will help identify water quality issues and assist in identifying any areas that would benefit from riparian restoration efforts. The Ridley and Delchester Run waters have been designated High Quality Cold Water Fishery by the Department of Environmental Protection. Maintaining this level of water quality is a priority and enhancing the quality is a long term goal. Locations along the streams where runoff from roadways or mowed areas enter the streams need to be monitored, watched for cutting erosion and plant loss. One such place currently eroded is the bank along the ice dam and mill race which acts as a stream viewing area for the visiting public. This bank needs to be replanted and access limited in order to stabilize the banks. Dog owners are utilizing the area for swimming their dogs. The area must be posted that no dogs are allowed in the stream until further notice, as it is access by dogs that has caused some of the significant bank erosion. Consideration should be given to specific management alternatives to allow dog access, and if solutions are cost prohibitive or unattainable, no access should be given to dogs. The existing dam is also causing erosion of this area.

Okehocking Preserve is fortunate to have two water courses of historical and ecological significance. Monitoring of these assets will ensure their long-term health and prosperity.

Routine water quality monitoring should be performed at the Garrett House to ensure a sufficient potable supply. Likewise, it has been indicated that wells exist above the Springhouse Ruins; such wells should be inventoried and monitored for safety reasons.

Objective 2: *Monitor woodland health*

All woodland areas should be routinely monitored for new invasive species, destructive insects, tree disease, and sapling regeneration. Saplings deep in the woodland interior may need to be fitted with deer browsing and buck rubbing deterrents in order to increase survival. It is the Township's intent to initiate a volunteer monitor program utilizing watershed partners including boy scout troops, local arborists, the forestry service, and any assistance through Ridley Creek State Park and their monitoring program.

The Asian Longhorned Beetle and Emerald Ash Borer are serious threats to Pennsylvania forests, and those managing the property must become familiar with their identification in order to notify the Pennsylvania Department of Conservation and Natural Resources immediately after a sighting.

Although not currently seen in the Preserve, the following plants and insects listed as threatening to Pennsylvania forests should be continually checked for.

- Emerald Ash Borer
- Asian Longhorned Beetle
- Sudden Oak Death
- Kudzu Vine
- Japanese Hops
- Japanese Knotweed
- Shattercane
- Goats Rue
- Bull Thistle
- Johnson Grass
- Jimson Weed
- Giant Hogweed
- Garlic Mustard

The Pennsylvania Department of Conservation and Natural Resources publishes and updates a list of threats to native ecological communities online at

http://www.dcnr.state.pa.us/forestry/wildplant/serious.aspx. The state agency would like all sightings of these plants to be reported in order to maintain up-to-date records.

Objective 3: *Monitor wildlife populations*

Several wildlife communities of note should be monitored for overall health and population: avian, amphibian, reptile, small mammal, and white tail deer.

Healthy wildlife communities allow Okehocking Preserve the ability to offer visitors multiple recreational experiences, among them: bird watching, fox hunting, and deer hunting (deer hunting is currently administered and conducted by the Delchester Conservation Group and is permitted to members only.) Wildlife surveys previously performed within the Preserve boundaries should continue in order to accurately monitor these wildlife populations.

Of special concern is the threat that a large white tail deer population poses to the vegetation within the Okehocking Preserve. Several areas of the park are currently impacted by deer over browsing, and buck rubbing has led to the loss of most saplings planted during recent riparian restoration efforts. An accurate count of the white tail deer population within the Okehocking Preserve will aid in assessing how many hunts must be arranged to reduce the herd. Currently the Delchester Conservation Group (DCG) has a deer management plan in place that the Township Board of Supervisors approved through September of 2006. (See Appendix 6) DCG utilizes Quality Deer Management strategies in its operations at Okehocking (go to www.qdma.org for further information).

Objective 4: *Regularly monitor to ensure the spray irrigation infrastructure is functioning properly and the spray water quality is not detrimental to the Okehocking Preserve*

The spray irrigation system offers water reclamation and water quality benefits to Willistown Township and Southeastern Pennsylvania. Operation and maintenance of the spray irrigation system is currently undertaken by Yerkes Associates, a Township subcontracted engineering firm, and it is anticipated that this arrangement will continue.

The quality of settled water that is sprayed onto the meadow must be monitored and kept within a specific range of attributes designated by PA DEP as safe to vegetation and wildlife within the Preserve. Yerkes Associates monitors these activities.

All spray heads should be visually inspected to guard against clogs or malfunctions. Other spray irrigation infrastructure such as the pump house and settling ponds should be inspected periodically to ensure structural stability. Yerkes Associates undertakes these activities.

Objective 5: *Perform routine monitoring of forest edge and riparian restoration locations and any other improvement project sites*

The enhancement of natural resources within the Okehocking Preserve will depend largely on the success of forest edge and riparian restoration efforts. Many previous efforts failed mainly due to the poor performance of deer browsing and buck rubbing deterrents placed on newly planted vegetation. According to the US Department of Agriculture Natural Resources Conservation Service (NRCS) (funding partner in the

riparian plantings), the wood stake and fishing wire method of deer control (which was utilized in the Preserve riparian plantings) is ineffective and they no longer fund or endorse projects proposing this method. NRCS recommends the use of Tubex (www.tubex.com) which, in addition to deer protection, when inserted 1-2" in the ground protects the base of the plant stem from mice and voles who can girdle roots and chew on the stem. The plants that survived the deer browsing and rubbing had debilitating mice and vole damage at the stems. The lack of mowing around the plants gave habitat and shelter to the mice and voles that routine mowing or herbicide spraying would have thwarted. Routine monitoring of new plantings will make it possible to identify failed deer defenses and permit modification to increase vegetation survival. Saplings take between 3 and 5 years to reach sufficient height that deer can no longer reach leaves.

Lesson learned: All such restoration/improvement projects at the Preserve must include deer structure installation and invasive plant management planning.

Goal 2: Promote native plant and wildlife communities

Attaining this goal will largely entail the control of invasive species and deer management within the park boundaries and the restoration of certain plant communities. The fulfillment of this goal will enable the Okehocking Preserve to showcase native Pennsylvania flora and fauna in an educational and recreational setting. This goal is to be reached through the fulfillment of four key objectives.

Objective 1: *Increase the survival of large mature trees in order to keep the forest canopy intact; re-establish understory in woodlands and riparian areas contingent upon deer management.*
Objective 2: *Restore forest edges to provide animal habitat and shade out invasive species.*
Objective 3: *Remove identified hedgerows that fragment portions of the Preserve and extend the riparian buffer along Delchester Run.*
Objective 4: *Reduce deer impacts to vegetation through the use of protective measures.*

These objectives center on rebuilding native plant communities and removing invasive vegetation, mainly vine species. The level of infestation by invasive vine species within the park not only threatens living native species physically, but also threatens their ability to reproduce. Management practices should attempt to disrupt the positive feedback loop between invasive species and disrupted plant communities. The disturbance in native ecological dynamics caused by invasive species, deer browse and rubbing, and historic land uses will take both time and community support to overcome.

Objective 1: *Increase the survival of large mature trees to keep the forest canopy intact; re-establish understory in woodlands and riparian areas contingent upon deer management.*

In the mature, old-field, and mid-successional woodlands (See Figure 9, Woodland Inventory) it is important to free large trees from the grasp of aggressive vines, mostly Oriental bittersweet. The complete removal of all invasive species in the woodlands is not feasible due to the large population. Damage caused by such species can be reduced however if large trees are freed from vines in order to maintain a tree canopy in the woodland areas.

Through this objective the native vegetation that is the most difficult to replace will be preserved. There are other invasive vine species in the Preserve, including mile-a minute and honeysuckle, but Oriental bittersweet vines currently are the predominant vine species causing distress to large trees.

The vine species that afflict the woodlands compete with native plants for light, which is why they grow up into trees and above other shrubs. By ensuring the tree canopy remains intact, the amount of light reaching vines on the woodland floor will be reduced. Vines have been smothering and killing large trees, opening up the canopy and further increasing their competitive edge. The objective is to reduce that edge and prevent the loss of older trees that take decades to replace. Measures to protect the tree canopy are necessary to maintain the ecological and scenic integrity of the Preserve.

Contingent upon invasives control and deer management, it will be beneficial to again establish a forest understory in the wooded areas of the Preserve. Instituting a striated system will eventually lead to an established understory of shrubs, grasses, ferns and other herbaceous plants that together form a layer upon the forest floor. Such an understory contributes significantly to the health of a forest (by providing nutrients, helping to slow the runoff of water, creating habitat, etc.), as well to the overall function of riparian areas.

Implementation Strategy

Oriental bittersweet management will require that vines be clipped and the cut stem tissue treated with herbicide preferably before the vines produce fruit in the fall. The trees that have thick bittersweet vines up the trunk and into the tree canopy are ones where the vines should be cut towards the bottom of the trunk. Root stumps of the vines should be treated with a systemic herbicide, such as Roundup. Roundup, or glyphosate, is a biodegradable herbicide that travels to the root systems of all plants and should only be applied to the cut stumps.

The areas where many such trees can be found are: the mature, old field, and mid-successional woodlands next to the Willistown Conservation Trust barn, and the mid-successional woodlands along Delchester Run. The vines in these locations are the densest along the interface with the mowed trails and meadows. Along Delchester Run, several trees have already been toppled across the stream; adhering to this strategy will prevent further losses in that delicate riparian area. A tornado touched down in the southern hillside woodland that abuts Delchester Run, creating sunny open spaces in the woodland that allowed invasive species to propogate. Replanting of canopy trees in these areas will assist in re-establishing the woodland ecology.

In addition to replanting canopy trees, every effort should be made to re-establish a striated system consisting of understory plants, shrubs and herbaceous layers. Success in this objective will largely depend on the ability of the Township to control invasive plants and reduce impacts from deer. Trial efforts should begin in the midsuccessional woodland area of the Preserve adjacent to the Willistown Conservation Trust's barn; these areas contain moderately large trees, contain fewer invasives, and offer conditions conducive to the establishment of new understory. The Township hopes to build upon an Eagle Scout deer exclosure in this woodland by 1) Clearing out the invasives, and 2) Planting native understory trees, shrubs and herbaceous plants.

The long term goal for the old field is to permit succession to continue, and project the area toward native striated woodland. Native tree planting and invasive plant control are priorities for this area.

Objective 2: *Restore forest edge and riparian plant communities*

The forest edge is the interface between woodland areas and any bordering meadow, agricultural field, or wetland (or other riparian area). Healthy forest edges are a plant community that progresses in height from long grasses, small shrubs, larger shrubs, and small to medium size trees which abut mature trees of the woodland. Ecologically, forest edges provide habitat and nesting areas for birds, food for forage animals, and cover for deer and small mammals. Intact forest edges that border agricultural areas also reduce the shading of crops by the forest canopy so that all cultivated rows are equally productive.

Within the Okehocking Preserve, the forest edges are where invasive vine and shrub species have replaced native plants. These are the areas most populated with invasive species as well as being the areas where visitors walk along trails and enjoy the park.

Several forest edge locations within the Okehocking Preserve are within such close proximity to Ridley Creek and Delchester Run that they are in the riparian zone. In those locations, restoration efforts will directly enhance the water quality of the streams. Figure 9 identifies existing and proposed riparian restoration areas.

The current edges do not increase in height as healthy ones should; vines form a dense mat atop a shrub zone and then abruptly the adult woodland trees begin. Forest edges in the Preserve are composed of multiflora rose, autumn olive, Russian olive, tree of heaven, Japanese stiltgrass, Oriental bittersweet, mile-a-minute, and honeysuckle. The degradation of the edges has allowed vines access to mature trees that can be overcome in just a few years time.

The restoration of the forest edge will be an important asset to the Preserve and enhance the recreational and educational opportunities of the park. Visitors engage in birding, walking, and horseback riding along trails that are located along forest edges. Restoring and enhancing these areas not only contributes to the health of the terrestrial environment but also affords improved opportunities for recreation and education.

Implementation Strategy

In the case of the Okehocking Preserve, forest edge restoration will consist of two steps. The first step involves the removal of vines and invasive shrubs; the second step involves replanting of the vacated area with native Pennsylvania vegetation. Target areas for edge restoration include the most heavily infested areas and those most visible to Okehocking Preserve guests. For example, the area around the Willistown Conservation Trust (WCT) barn meets both criteria; replanting in this area could provide educational opportunities as well as opportunities for broad community involvement. As this barn is owned by WCT, their active involvement in maintaining this portion of the Preserve will be required.

Removing as many invasive shrubs and vines as possible along the forest edge is critical. Areas where invasive plants were removed will also have to be monitored and weeded periodically for several years. Multiple weeding occasions are necessary to rid the Preserve of species with large taproots, such as multiflora rose and plants with vast soil seed deposits such as tree of heaven.

The second step towards restoring the forest edge will require planting native grass, shrub and small to medium size trees. The new vegetation will also have to be planted in such a way as to provide maximum protection from deer browsing and buck rubbing. Listed below are native plants suggested by the Pennsylvania Department of Conservation and Natural Resources for healthy forest edges (the Willistown Environmental Protection Code, Chapter 73, also lists trees and plants appropriate for different planting conditions)(while Chapter 73 does not currently contain a listing of deer resistant plant species, efforts are underway to add this component to the ordinance). More information concerning native Pennsylvania vegetation can be found online at www.dcnr.state.pa.us/forestry/widplant/sixbasicx.aspx .

Native grasses

Big Bluestem
Bottlebrush Grass
Riverbank Wild-Rye
Virginia Wild-Rye

Small Trees and Shrubs

Service Berry
New Jersey Tea
Button Bush
Witch Hazel
Winter Berry
Mountain Laurel
Spicebush
Ninebark
Wild Plum
Pinxter-Flower
Elderberry
Lowbush Blueberry
Highbush Blueberry
Maple Leaved Vibernum
Virginia Creeper

Medium Size Trees

Sassafras
Black Gum
Green Ash
Black Birch
Red Maple

Okehocking TreeVitalize Grant - Ridley Main Stem

Scientific Name	Common Name	Suggested Planting Location
Betula nigra	river birch	near edge of banks
Carpinus caroliniana	Ame. hornbeam	scatter as understory small tree
Cornus florida	flowering dogwood	interior of buffer, scatter for aesthetics
Fraxinus pennsylvanica	green ash	inundated areas, near Hunters Run
Liriodendron tulipifera	tulip poplar	place in canopy gaps to establish shade
Prunus americana	American plum	along hedgerow near Hunters Run
Amelanchier canadensis	serviceberry	scatter in smaller canopy gaps or edge areas
Clethra alnifolia	sweet pepperbush	shady areas
Cornus amomum	silky dogwood	plant near bank edges
Hamamelis virginicus	witch hazel	scatter as understory small tree
Itea virginica	Virginia sweetspire	plant in clusters in wet ground

Sambucus canadensis	common elderberry	plant in part sun, clusters of 2 or 3, wet areas
Viburnum dentatum	arrowwood	shady areas
Viburnum prunifolium	black haw	scatter throughout

The riparian restoration efforts performed previously in the Preserve mainly failed due to poor protection from whitetail deer. In order to ensure survival of vegetation in the forest edge restoration areas, protection against buck rubbing and browsing must be utilized. Current recommended practices include the use of Tubex as opposed to the wood stake and monofilament line method. Some wire cages have been shown to be effective at preventing foliage from being eaten when placed around shrubs and saplings. Additional plastic support around trunks and metal posts placed next to trunks give deer the opportunity to rub against metal rather than the plant. Deer deterrents will need to be in place for several years while the plants mature. Plant lists will vary between riparian planting areas depending upon soils, light, etc.; however, generally many of the trees and shrubs will be the same. Following is the plant list for the riparian buffer planting along the west side of the Ridley by the Route 3 entrance to the Preserve:

In addition to protecting the vegetation from deer, damage from shrews, voles, and other rodents have proven to be a problem at the Preserve. The rodents will eat leaves, eat rings around the plant stems disrupting nutrient pathways, and can girdle the plant roots. Small netting at the ground level placed around stems and trunks will prevent damage. Plants should be checked periodically to assess the netting. Keeping the area closely mown or mulched and weed free will discourage rodents by taking their cover away. The current use of Tubex as a deer deterrent, when installed 1-2” below the soil line, has also been shown to be an effective rodent control. A jagged bite pattern in the leaves will differentiate rodent browsing from deer browsing.

Objective 3: *Remove identified hedgerows that fragment portions of the Preserve*

The third objective toward achieving the goal of controlling invasive species within Okehocking Preserve focuses on reducing the number of hedgerows at the Preserve. The role of hedgerows in meadow and transitional forest ecosystems can be both positive and negative. Positive aspects of hedgerows are habitat and forage provisions for bird and mammal species, as well as scenic landscape division. However, hedgerows can also foster invasive species and act as seed dispersal locations that can infest other park areas. Within Okehocking Preserve there are four hedgerows designated for removal (see Figure 9, Woodland Inventory). In order to control invasive species within Okehocking Preserve the unwanted hedgerows must be removed to reduce the spread of seeds throughout the park.

The four areas of hedgerows are composed of similar communities of invasive species that include multiflora rose, autumn olive, some Russian olive, and tree of heaven. Vine species are also present in the hedgerows, but the removal of the plants upon which they climb will phase out favorable conditions for such vines. Physical and chemical means of removal are necessary to eliminate the designated hedgerows.

Implementation Strategy

Hedgerow removal will be a three-part process. First, the hedgerows must be removed from the ground. Second, the displaced vegetation must be removed from the Preserve, ideally to a landfill so the remains cannot germinate in another location. And third, the freshly exposed land will need to be replanted with native grasses.

Removing the hedgerows is going to be a large physical undertaking. The long stands of vegetation are filled with dense woody shrubs that are thorny and covered with vines. The hedgerows will need to be removed through a combination of cutting and digging to remove as much root mass as possible. The root systems need to be removed in order to prevent new sprouting. An alternative to physical removal would be to selectively burn the hedgerows and then remove as much of the remaining root mass as possible. Selective burns have been successful at controlling some forms of invasives, as well as reducing disturbance to seed beds often accompanied by physical removal, but burning requires careful planning. Coordination with local fire companies is suggested, as well as the expertise of professionals knowledgeable on controlled burns (Natural Lands Trust, among others, have experience with controlled burns). Furthermore, while controlled burns do not require specific permits, the Township should consider contacting the state fire marshal's office before instituting a burn (under state code, local burning is typically permitted by local municipalities).

The complete removal of these plants is critical. The invasive vegetation species within Okehocking Preserve are very durable and the seeds produced will last several years. As such, any composting on site will present future problems.

In conjunction with removing vegetation, quick replanting of the exposed ground will assist in preventing invasive vegetation from growing back. Quickly replanting the exposed soil will also reduce erosion of topsoil into Ridley Creek and Delchester Run. Invasive species management through mowing, spot spraying and mechanical removal will be required for several years after hedgerow removal.

Objective 4: *Reduce deer impacts to vegetation through the use of protective measures and managed harvests.*

Several references to the management of deer exist in this publication. Deterrents, use of Tubex, monitoring, harvesting, coordinating with adjacent landowners, and other forms of control must be considered if existing, valued vegetation is to survive and plant restoration is to be successful. Currently the Delchester Conservation Group monitors and manages the deer population at Okehocking.

Deer exclosure fencing is one technique being currently applied in the mid-successional woodland south of Delchester Run. Approximately 2 acres have been fenced by an Eagle Scout. Next steps include removal of invasives within exclosure (majority Amur honeysuckle), planting of native materials, and monitoring. This project should be proposed to Eagle Scouts from Malvern and Willistown Boy Scout Troops. Exclosure fencing should remain until native plantings are large enough to withstand deer impacts, or appropriate plant protection or deer deterrents must be installed.

Goal 3: Manage the Preserve for Water Resource Protection and Improvement

Attaining this goal will be achieved largely through riparian establishment and restoration, removing the dam (based upon impact assessment), and monitoring for erosion, pollution and runoff.

Objective 1: *Establish new and enhance existing riparian buffers along stream corridors of Delchester Run and Ridley Creek*

A riparian buffer is that area located adjacent to any water course or body of water. The Willistown Township Riparian Buffer Ordinance calls for a 100' vegetated buffer on either side of a water course. This buffer serves to promote stream health in four ways. First, the plant root systems stabilize the banks of the stream helping to prevent stream erosion. Second, the plants filter out pollutants from stormwater runoff. Third, the buffer protects stream ecology and wildlife by keeping the water temperatures cool in the summer via shade and by offering nutrients to the ecosystem through fallen leaves from the plants. Finally, the buffer vegetation slows rainwater runoff and lessens downstream flooding.

Riparian areas along Ridley Creek are also attractive birding locations, are an important piece of the greater network of woodlands north and south of Okehocking, and have been designated by the Audubon Society as a significant bird migration corridor. Improving the Ridley riparian corridor and connecting the existing mid successional woodland buffer along Delchester Run to the Ridley buffer will improve this woodland network.

Implementation Strategy

Consistent with the Township's Riparian Buffer Area (RBA) Conservation District (Article XII of Chapter 73 of the Township Code), protection will be provided along a width of at least a 100 feet on either side of Delchester Run and Ridley Creek (both perennial streams). Pursuant to the ordinance, the RBA consists of two zones, zone 1 being that land within 25 feet of the water body or wetland (and shall include any contiguous area of slopes in excess of 15%), and zone 2 being the remainder of the RBA. While certain uses are permitted within RBA's, preservation and enhancement of such areas is required pursuant to § 73-55.1. Restoration efforts will be conducted in a manner that substantially subscribes to the Township's standards for preservation and enhancement.

Priority 1 Riparian Restoration Area

Area 3-b (see Figure 8, Meadow Inventory) has a significant multiflora rose population and colony of purple loosestrife, both of which compromise the overall health of the riparian area and render this the highest priority restoration area within the Preserve. The Natural Resources Conservation Service and Delchester Conservation Group are working with the Director of Parks and Preserves to coordinate, fund and execute this restoration project. Initial plans are to have a trackhoe excavator remove the multiflora rose, including the roots, and burn it this winter when the soil is frozen. The next step would be the installation of a meadow seed mix conducive to the soils and hydrology of the floodplain. Ongoing rigorous meadow management for a minimum of 3 years will be called for utilizing different techniques as necessary, including herbicide treatments, mechanical invasive removal and spot mowing. Recommended riparian corridor restoration along the main stem of the Ridley will be consistent with requirements for riparian protection and restoration contained in Chapter 73 of the Township Code. Consideration will be given to enlarging the buffer width in Area 3b to a depth of 200,' given the importance of the Ridley Creek and its status as a high quality stream.

Priority 2 Riparian Restoration Area
Connecting the existing mid successional woodland buffer along Delchester Run to the Ridley buffer.

Objective 2: *Remove the dam and ice dam based upon engineering and design plan.*

There is a concerted effort to remove dams along the Ridley Creek watershed for the benefit of stream ecology, habitat and fish movement. The Delaware County Anglers group spearheaded an effort to remove the Irving Mill dam, (the first dam upstream from Delaware River), and the Sharpless Dam (the second dam upstream from the Delaware River) with funding from William Penn, American Rivers, Fish America, the American Sportsfisherman's Association and the Delaware Estuary Program. The third dam upstream from the River, at the Upper Banks Farm in Media PA, is under review by the PA Fish and Boat Commission. This dam has three holes in it which are currently patched. It is likely that the boards will be removed and it may not be necessary to totally remove the dam. The fourth dam is at Media Waterworks, on Baltimore Pike in Media. This dam will require a fish ladder. Another dam, between the Media Waterworks dam and the Okehocking dam, is the Ridley Creek State Park dam.

The removal efforts, under the leadership of Delco Anglers partnering with the Chester-Ridley-Crum Watersheds Association and the Pennsylvania Fish and Boat Commission, constitute a movement to establish anadramous (migratory) fish in Ridley creek; specifically restoring shad, striped bass and trout so they will be self sustaining; and improving stream ecology and habitat. Water quality benefits of dam removal include enhancing the connectivity of floodplains, making them more functional for managing flood waters, decreasing flooding events and assisting in water cleansing and groundwater recharge. Studies done by the Academy of Natural Sciences have shown that dam impoundment areas increase water temperatures, accumulate sediment and pollutants and often result in less healthy fish populations. Further benefits of dam removal include restoring the natural dynamics of the water course by re-establishing natural stream flow, permitting transport of nutrients and sediment, and lowering water temperature (which improves the overall stream ecology and provides support to beneficial macroinvertebrates).

According to Delco Anglers, there is a state law requiring that fish have the ability to move up stream to spawn; should a stream be blocked, provision must be made for relief. Once migratory fish are found at the base of a dam, a fish ladder or gate must be installed to allow fish movement upstream. This will only happen at Okehocking if the dam at Ridley Creek comes down or has a fish ladder or gate installed and if the fish ladder is installed at the Media Waterworks. Township staff should stay informed on the progress of this effort and be prepared to remove the dam or have a ladder or gate installed at the dam (a ladder would be chosen if an impact assessment finds upstream ecology will be negatively impacted by dam removal).

Dams on public property can be a safety liability and financial strain. Additionally, Delco Anglers advises that the Township may be required to post signage at the dam area stating no swimming and no boating. The Township has met with the PA Fish and Boat Commission and this agency is currently determining if any sign requirements apply to the dam and whether the dam is registered with DEP. DEP registration requires an engineering report on the structural soundness of the dam (which has not been conducted to date). If, in the future, the dam collects mud and silt and the Township identifies a need

to dredge the area, a DEP permit issued through the Chester County Conservation District will be required. Should the silt be removed from the property, the Township will have to adhere to Army Corps of Engineers requirements (which include testing of the soils being removed from the site).

The Willistown Township Environmental Advisory Council and Board of Supervisors unanimously endorsed the removal of the dam conditioned upon: 1) the results of the engineering and design plan ensures that there will be little or no adverse impact to the upstream hydrology and associated habitat, and 2) that some type of sign/plaque acknowledging the existence and historical use of the dam be placed near the current dam site.

To date, Delaware County Anglers, Chester-Ridley-Crum Watersheds Association, and PA Fish and Boat Commission have committed to partner with the Township on this project.

Implementation Strategy

Site Visit with PA Fish and Boat Commission: The Director of Parks and Preserves has met with the PA Fish and Boat Commission (PA Boat) Fisheries Biologist and Delco Anglers for a site evaluation of the Okehocking dam. Based on the PA Boat field review and assessment of watershed size, removing the structure would not effect upstream floodplain ecology and would enhance the ecosystem connectivity between the floodplain and stream adjacent to and below the impoundment. PA Boat's Chief of Habitat Management conducted a paper review of the dam and its location and responded that it would be an outstanding dam removal project because of the restoration of habitat in the area and its location in the 159-acre Preserve.

The PA Boat Fisheries Biologist advised that the dam removal would be of benefit not only environmentally but also would relieve the Township of any liability of long term maintenance costs. The Township, as property owner, is responsible for maintenance and upkeep of the dam. If it is registered with DEP there are certain maintenance and upkeep measures that the Township should be taking. DEP conducts inspections once every 5 years on registered dams. PA Boat believes that the dam is registered, and will notify the Township when it hears from DEP.

The PA Fish and Boat Commission has committed to assist in coordinating the Partner meeting, will assist with grant writing to fund the removal, and will assist with all phases of the project.

Site Assessment Meeting with Partner Organizations

Coordinate meeting with PA DEP, American Rivers, PA Fish and Boat Commission, Chester County Conservation District and Army Corps of Engineers. Partners decide if they want to participate in the project.

Establish Funding Sources

Work with partners to identify potential funding sources, write grants and attain project funding. Contact has already been made to American Rivers and the Natural Resources Conservation Service. There are very active funding sources and the likelihood of getting full funding is high.

Engineering and Design Plan

DEP defines what level of site planning and engineering would be required for the project Site planning takes into account above and below impoundment habitat. The Township concern about adversely impacting upstream hydrology and associated habitat will be expressed to DEP. Based upon the Plan assessment of upstream hydrology, the project will proceed.

Dam Deconstruction and Follow Up
After dam removal, streams are generally left to establish naturally. The PA Fish and Boat Commission will return within the first two years to assess the area and determine if any remedial action is necessary. Township monitoring will also be an important tool to head off potential problems.

C. Recreation Management

In general, the natural resources and scenic beauty of Okehocking Preserve are intended to be enjoyed through passive recreation. Hiking, horseback riding, birding, picnicking, and cross country skiing are among the passive activities that are encouraged due to their low impact on wildlife and vegetation. In addition, the Township is permitted through the terms of the property's conservation easement to engage in other recreational uses on portions of the property. For example, Meadow 3 (sections 3a and 3b identified in Figure 8, Meadow Inventory) may be converted to active recreation in the future should the Township determine that additional active recreation is needed.

Under the terms of the conservation easement held by Willistown Conservation Trust, the Preserve is divided into four Recreational Use categories. These are:

Passive Recreation
Those recreational and open space activities which can be carried out with little or no alteration or disruption to the natural features of the land on which they take place. Examples of such activities include walking, jogging, picnicking, bird watching, horseback riding and nature study.

Low Impact Active Recreation
Those recreational and open space activities which can be carried out with minimal impact or disruption to the natural features of the land on which they take place but include certain more active uses than Passive Recreation defined above. Examples of such more active uses include informal games (those not requiring permanent or fixed structures), ice skating, camping, and community horticultural or agricultural activities.

Active Recreation
Those recreational and open space activities which require physical alteration to the land on which they take place. Examples of such alteration would include the construction of playgrounds and ball fields, tennis and basketball courts and paved walking trails, spectator stands, goalposts, restrooms and refreshment structures, paving and earthmoving associated with the foregoing uses and with community agricultural or horticultural activities.

Passive and Active Recreation Consistent with Historic Integrity
Those Passive and Active Recreation and open space activities which are managed with particular attention to preserving the integrity of the historic landscape and structures of the Conservation Easement Area.

Figure 7, Trails and Recreational Use, delineates those areas within which the four types of recreational use are permitted.

In addition to the uses described above, the Township is considering making the Okehocking Preserve available for public and private events operated in a manner that minimizes disturbance to natural resources, wildlife, air and water quality. In order to do this, the Township will need to institute a fee schedule and permitting process and ensure that adequate security will be available for such events.

The Township also plans to promote what it is calling "nature recreation" or "environmental recreation" as a way to encourage the public to get out on the land, experience the outdoors and create a life-long relationship with nature.

Goal 1: To develop and maintain trails that are erosion free and adequate to serve visitors.

The Okehocking trail system is the vital network through which visitors can explore the park and enjoy the natural resources within. To some degree, the trail system also protects wildlife and vegetation from intrusion into habitat by Preserve visitors. All trails within the Okehocking Preserve are mowed and/or cleared of debris in order to provide clear passage to visitors of all ages and fitness levels.

Implementation Strategy
Implementation of this goal requires routine mowing and upkeep of the entire trail system as well as the posting of Park and Recreation Code 95 which states regulations in visible locations. Additional rules and regulations may be defined and posted by the Township in strategic locations throughout the Preserve. Maintain all trails between 6-8 feet wide, and maintain mown trails at a height of 3-6".

The trail system, discussed thoroughly in section three, encompasses three different Preserve zones; the recreation meadows (Area 3), low-impact recreation meadows (Area 1), and dog loop (Area 2). Proper trail maintenance is critical to encouraging passive recreation within Okehocking Preserve. A routine mowing schedule will be maintained to keep trail grass height at approximately 4-6 inches. Trail maintenance will also include clearing any debris or branches that may fall onto the trails, monitoring any erosion that occurs within the trail system and consequent re-stabilization with grass where appropriate.

The locations of the trails should not be considered permanent. Some trails may eventually need to be rerouted in order to prevent erosion from high use. Currently, one trail needs to be improved and reengineered because it directly intersects with a natural spring that drains into Ridley Creek (this trail is located south of the Willistown Conservation Trust barn).

The visible presentation of rules and regulations at the main parking areas will encourage respect for the policies of the park and the natural resources within. The Willistown Park and Recreation Code (95) is posted at the trail head at the Delchester Road entrance and the Route 3 entrance.

The southwestern corner of the Preserve (the recreation meadow – Area 3) is isolated from the majority of the park by the intersection of Ridley Creek. A pedestrian bridge across Ridley Creek to connect this section of the Preserve to the remaining acreage is highly desirable. A foot bridge would eliminate the need for visitors to move their cars to a second parking lot in order to explore the entire park, thus providing the opportunity for a complete park experience, and would permit remote parking at the Garrett Mill Park for special events held on the east side of Ridley Creek (the majority of the Park). The connection of trails on either side of the creek will add additional recreation time to those visitors who are looking for longer hikes, different views of the Preserve, etc.

Finally, since trail use is often synonymous with dog walking, the Township should establish rules for dog access (such rules will be posted in the display cases identified on Figure 10, Improvements). Dogs are permitted on leash throughout the Preserve. Dogs are permitted off leash on the trail loop around the spray fields. Dogs must be under voice command at all times and may not harass wildlife or other visitors. Finally, dog owners are responsible for waste pick-up. Should dog waste become a problem, the Township may wish to consider the placement of waste bag dispensers at key locations in the Preserve.

Goal 2: To offer recreational use consistent with the terms of the Preserve's conservation easement while respecting the natural, scenic and historic resources of the Preserve.

Although the Preserve is intended primarily for passive recreational uses, the Township is permitted under the terms of the property's conservation easement to selectively utilize portions of the property for more active recreational use. That said, it will be important to coordinate short and long term management strategies for the Preserve with Township goals for recreation. At this time, the Township has no specific plans for active recreation on the site other than for community events (it currently holds the Okehocking Powwow at this location, for example); as such, the management strategies outlined herein address only existing uses.

Objective 1: *Coordinate the management strategies outlined herein with future actions taken by the Township to offer active recreation on select portions of the Preserve.*

This objective is intended to highlight the importance of coordinating existing and future activities at the Preserve. Currently, the Preserve is being managed as a natural area that offers passive recreation and one area for active recreation in the form of community events. Should the Township conclude at some future date that it needs to develop additional land for active recreation, design consideration should be given to, and measures should be taken to safeguard the natural, scenic, historic and passive recreation amenities of the remainder of the Preserve to the maximum extent possible. Only through coordinated actions can the Township hope to realize the many goals and objectives outlined in this plan.

Objective 2: *Promote alternative passive recreational activities and environmental recreation in addition to traditional activities.*

This objective is intended to encourage the Township, in addition to traditional passive recreational activities such as walking, jogging, picnicking, bird watching, horseback riding and nature study, to coordinate innovative passive outdoor recreational opportunities such as geocashing and frisbee golf. Environmental recreational activities include nocturnal wildlife counts and overnights, owl prowls, community supported agriculture or community gardening, and wildlife and plant identification treasure hunts. Further, the Township would like to promote and establish volunteerism as a form of recreation.

Goal 3: Accommodate public and private group functions operated in a manner consistent with the overall management objectives of the Okehocking Preserve.

The landscape of the Okehocking Preserve is a beautiful backdrop for public and private functions, such as Township meetings, community and recreation events, open forums, lectures, markets, wedding receptions and other private get-togethers. Currently the Township is considering making the Preserve available for such functions; issues to be addressed include the creation of a permitting process and fee schedule, insurance of adequate security for such events, planning for these purposes in the construction of the environmental/nature center, and minimal disturbance to natural resources and wildlife.

Private functions should only be permitted under the auspices of a formal contract between the Township and the event organizer that covers fees, privately supplied security, parking, clean-up, insurance and rules and regulations of the Preserve. Any breach of the contract will result in expulsion from the Preserve with no refund, and/or the inability of the event organizer to plan another event in Okehocking Preserve.

Adequate parking areas and scenic vistas make Okehocking Preserve an ideal location for public and private gatherings. Parking for both public and private events will be located at the Garrett Mill Park parking lot, Route 3 entrance lot, and Delchester Road entrance lot. Special Event parking areas include the hill east of the Garrett House (Event Parking Area A), in the field off of the Delchester Road entrance (Event Parking Area B), north of Delchester Run (Event Parking Area C), and in the field west of Garrett Mill Road (Event Parking Area D) (see Figure 10). Other event parking on Preserve grounds will be prohibited due the potential for disturbance to the natural resources (cars can leak pollutants such as oil or coolant, carry in unwanted seeds and trash, disturb vegetation, create ruts, increase erosion and expose topsoil, among other things).

D. Education and Outreach Management

Goal: Make available for education the ecological, recreational and historical resources of the Okehocking Preserve and establish programs to promote the understanding, stewardship, advocacy and use of these resources.

Natural and historical features within the Okehocking Preserve offer an abundance of educational opportunities for community members of all age levels. The Preserve is capable of supporting one -time activities, group visits, and both informal and formal educational programs.

One-time activities include volunteer wildlife surveys, sponsored day and night hikes, and workshops. Volunteer wildlife surveys would be of special interest to community members with an active interest in naturalism and ecology. Such surveys could include monthly bird counts, reptile and amphibian population assessments, as well as mammal tracking.

Longer term activities include volunteer water and wildlife monitoring, restoration and management projects and educational programming activities.

Sponsored hikes are an ideal way to introduce residents to the Preserve and highlight the outstanding natural features found within. Hikes can be themed, having an historical, bird watching (eg. owl prowls), aquatic, ecological, wildlife, or plant based focus. Where one good experience brings about another, a variety of interesting and educational hikes are likely to create a community of returning visitors to the Preserve.

Varied and seasonal workshops are an educational tool that can appeal across age groups as well as attract families to Okehocking Preserve. Options for workshops can be bird, butterfly and bat box making; bird identification, plant and flower identification, backyard stewardship, and native

garden creation. Project installation using Okehocking as an outdoor classroom will give a place for people to return to again and again to see the progress of a planting or observe the wildlife that utilize newly established habitat. A range of workshops that attracts families and individuals broadens the appeal of Okehocking Preserve throughout the community.

Promoting the Okehocking Preserve as an educational experience, as well as a recreational one, opens the area to a diverse population of potential visitors. Group visits that bring in young children from the Great Valley School District, local summer camps, boy scouts and girl scouts are an ideal way to foster environmental stewardship and interest in open space preservation. The Okehocking Preserve will remain intact open space in Willistown Township, and young visitors are likely to return as adults.

The natural resources of the Preserve offer many levels of environmental science and naturalism that can be taught to adult or school age groups, allowing lessons for any grade or target audience. The same natural resources offer endless opportunities to educate the public about best management practices that they can take with them to their own back yards. Lecture series, hands -on projects and posted maps or other informational displays are educational opportunities the Preserve can offer. Volunteer guest lecturers from the community could speak on a range of environmental or land stewardship topics. Visitors interested in an educational experience would also benefit from regular posting of events and points of interest in the display cases and on the Township web site.

One additional step that Okehocking Preserve can take to enhance its educational message would be to place interpretive signs along the trails at specific points of interest (including posted maps). A developed signage program throughout the park would not only educate guests, but could potentially spark interest in unfamiliar topics and lead to further participation in educational programs. A marking system revealing numbers in the landscape that corresponds to a map available at the informational kiosks or on the Township web site describing attributes of the Preserve, or specific management practices, is also desirable.

The long term success of any educational programs will rely on two things: 1) the ability of the Township to form partnerships with educational institutions, local scout groups, summer camps, and senior groups and other environmentally minded organizations to run programs at Okehocking, and 2) to have a facility in which the public could meet and programs could be held.

Regarding the first criteria – the Okehocking partnership network is strong as a result of the state Department of Conservation Natural Resources and Chester County's grant programs encouragement to establish partnerships in order to make one's acquisition grant stronger. Willistown Township's partnership networking for Okehocking began in 1999. The Township must conduct outreach to its partners to establish what ways in which they can participate in educational and recreational programming at Okehocking. Having partners run the programs would benefit both their organizations in many ways including giving them an indoor and outdoor class and play room in which they can operate and enabling them to expand their activities, and would benefit the Township in many ways including having the partners supply the programmers and not requiring the Township to hire additional staff to run the programs, by the programs assisting in the management of the Preserve, and by involving people at the Preserve building a fan base as well as a volunteer base. Currently the Township has established relationships with many such groups, but a program must be put in place to keep these groups engaged, manage and maintain long term commitment from the groups and utilize these groups in assisting with management projects and initiatives at the Preserve.

Regarding the second criteria –The Township intends to acquire grant funding to construct the center and establish a maintenance endowment from private funds so no tax payer money would be used. The Township has negotiated terms in the conservation easement that reserve the right for such a structure to be located where the Garrett barn is being dismantled (as the structure is a safety hazard). The location is optimal as it is in the center section of the Preserve and overlooks the stream valley and rolling hills. The facility would support the use of the Preserve as an outdoor classroom at the same time as enabling it to be used as such. The facility would employ green technology where possible in accordance with the theme and function of the facility and Okehocking Preserve as a whole.

Implementation Strategy

Continue existing educational programs established through the Partnership Network and establish new programs through local schools, education institutions and non-profits. The Director has been instructed by the Board of Supervisors to conduct partnership networking to define how current and potential partners may utilize the Preserve for education, outreach and recreation. The Director will utilize the Environmental Advisory Council (EAC) (formally the Okehocking Preserve Committee) and other Township advisory boards as appropriate, in undertaking program development, partner outreach, and program scheduling. The Director of Parks, Recreation, and Preserves will act as the liaison and guide the planning of one-time activities, group visits, and informational and educational programs. Continued outreach to partner groups must be conducted in order to formulate the educational approach of the park. A program must be put in place to define the participation level of the partners, manage and maintain long term commitments from the partners, gear the commitments toward assisting with management projects and initiatives, and to keep the groups engaged. Grant funding to assist in this aspect of planning should be pursued.

Implementation of the Township's environmental education and outreach goals (as well as management and recreation goals) includes the construction of an environmental/nature/community center at the Preserve utilizing green technology. Such a facility would house staff and provide program meeting space, exhibit space, and lecture space, and storage among other things. The environmental protection, improvement, conservation and recreation values of the Township and the Preserve would be advanced through such a facility and would enable the Township to ignite the public's interest in the environment and promote conservation and natural resource improvement and nature recreation through environmental education programs and events (many of which would utilize the Preserve's ideal "outdoor classroom"). Such programs and events would assist in building a volunteer base for resource improvement projects and recreational and educational programming of Okehocking. Okehocking would also act as a land management model for residential and public landowners. During inclement weather, the center would continue to provide access to and interaction with environmental, conservation and natural resource improvement activities. In addition, the building could be used to hold special Township events or be leased to the public for special events. Opportunities for community group meetings and lectures, would be possible. Initial outreach to partners has revealed a significant need for such a facility. Grant funding to determine size and layout of the facility to fit educational and management needs as well as to construct the facility will be pursued.

Many of the management goals are interwoven. Operating the Preserve efficiently will lead to accomplishing many of the management goals at one time. This approach is the foundation for the plan to construct an environmental/nature center at the Garret Barn site. In addition to the Education and Outreach goals for Okehocking, such a facility has wide reaching potential to

accomplish the Partnership Network, Natural Resource, Recreation, Historic Resource and Agricultural goals and objectives for the property.

The Township mission and purpose for the environmental/nature center is as follows:

1. Mission:
   - Enhance people's relationship with nature, sense of community and knowledge of natural resource management and stewardship thus improving their life experience and creating a life-long advocate and practitioner.

2. Purpose:
   - Ignite the public's interest in the environment and promote conservation and natural resource stewardship and improvement through providing quality environmental education programming and recreation.
     Encourage community "ownership" of Okehocking Preserve, establishing a strong volunteer base and programs that will ensure the long term ecologic, educational and recreational successes of the Preserve and its public benefits.
     Provide a facility for public environmental education and recreation resulting in a positive impact on the ecology at Okehocking and enriching the lives of those who visit. (Provide quality programs, not based upon volume of participants, but upon quality which will safeguard the property from over use.)
     Promote and execute conservation and natural resource management now to insure their future.
   - Provide an indoor educational/meeting/gathering space and an outdoor classroom, which is the Preserve.
   - Promote positive relationships between humans and the environment and proper land and natural resource management techniques and stewardship.
   - Promote the use of green technology.
   - Provide office space for Township Parks and Preserves Department, park managers, partner programming staff, volunteer staff, etc.
   - Provide space to community organizations/groups for meetings/lectures/events.
   - Hold special Township events and lease to the public and organizations for special events.

This mission and purpose may be streamlined as the partnership networking process advances.

The Township Supervisors made a motion in their May 22nd 2006 public meeting instructing the Director of Parks and Preserves to pursue the construction of an environmental education/nature center at Okehocking Preserve including but not limited to developing program partners, lining up funding for construction and associated work, and pursuing a maintenance endowment.

E. Historic Resource Management

Much of the rural and scenic character of Willistown Township and the Okehocking Preserve are due to the role of Pennsylvania in the early history of the United States. Okehocking Preserve was not only the first Native American land grant in the country, but also has a rich Quaker history dating back to the late seventeenth century when Pennsylvania was first settled. Okehocking Preserve contains multiple historic features and ruins, the majority of which are intended to be maintained to the extent possible for future generations to enjoy and admire.

Goal 1: Preserve, and maintain the integrity of selected historical resources and acknowledge ruins or any historic structures that will be removed.

Within the Okehocking Preserve there are six distinctive historical features; Garrett House, Garrett Barn, the Ice Dam and Mill Race, Golder's Barn (Willistown Conservation Trust owned and managed), Springhouse Ruins, and Golder's Ruins.

The Aaron Garrett Jr. House is an important historical, aesthetic and functional resource for the Okehocking Preserve. It is highly visible from the interior of the Preserve, as well as from West Chester Pike. The exterior was restored and should be maintained in keeping with the original English Quaker architecture in order to protect the aesthetic and historical value of the house.

The Garrett Barn must either be restored fully or demolished. The Township recently paid to secure the structure's roof but a full analysis of the structural integrity of the barn and the potential rehabilitation cost (a minimum of $300,000) is considered excessive. The barn has been deemed unstable by a registered engineer. The Township Supervisors voted to dismantle the barn based on the unstable nature of the structure; both the Township Historic Commission and the Willistown Conservation Trust (who holds the conservation easement) approve of this decision. Should the barn ultimately be removed, its foundation could be secured appropriately and an historic marker placed on the site. Conversely, should the Township build an education/community center on the site, stone from the foundation could be incorporated into the new facility and an historic marker placed in recognition.

The Township has applied to the DEP Growing Greener program to remove the Ice Dam and Mill Race on Ridley Creek which will be of significant benefit to the Preserve's ecology and the watershed downstream of the Preserve and will end the significant erosion resulting from the structure. The dam is also a liability to the Township in terms of safety and maintenance requirements. A descriptive historical marker should be placed in close proximity to the dam location.

The Springhouse Ruins and Golder's Barn should be maintained in their current form. Research done to document these structures has identified their use and approximate age, however additional research is needed to paint a concise picture of these structures and the economy once supported by the land of the Preserve.

The Golder's Barn is owned and managed by the Willistown Conservation Trust (WCT). A partial restoration of the structure has been completed however WCT has not obtained a certificate of occupancy and therefore the structure is not open for public events. It is the Township's understanding that WCT may consider this in the future. WCT also owns the Springhouse Ruins.

Goal 2: Document known human use of the land for both reference and public education purposes.

There is information missing in the complete timeline of the historical structures within the Okehocking Preserve. In order to document and share information regarding the history of the Okehocking Preserve and Township, such gaps should be filled.

The Historic Commission can work in concert with the Willistown Conservation Trust and other knowledgeable local groups to carry out the needed research. Fulfillment of this goal will make it possible to educate the public about the Preserve's past, possibly through the creation of a brochure. Such a brochure could not only document the unique features of the Preserve, but act as an educational tool for visitors and community members. Content could include, but not be

limited to, information regarding Native American and Colonial use of the land, the William Penn Land Grant, origins of the word "Okehocking", twentieth century uses of the land, as well as the current preservation and easement structure.

F. Agriculture Management

Goal: Establish a program to promote agricultural use on designated portions of the Okehocking Preserve

The land at Okehocking Preserve has been in agriculture since the 18th Century. Cropping, haying, livestock and equestrian operations continue throughout Willistown Township. Though Okehocking is intended to be managed primarily to promote the enhancement of its natural resources, there is a place for agriculture as well, particularly with an emphasis on community involvement. There are two main options for agricultural programs at Okehocking: 1) Community Supported Agriculture (CSA), and 2) Community Gardening Program, and a Farmers Market. Such uses are generally permitted under the Township's zoning ordinance (provided more than 50% of processed or merchandised products are produced on the property). Furthermore, the conservation easement permits such uses in designated areas

Community Supported Agriculture (CSA) is a method of farming by which the community makes an investment in the farm operation at the beginning of the year and collects shares of produce during the growing season. In many cases, the community becomes involved in the working of the farm, and individuals may even work for shares. By purchasing advance shares, "shareholders" reduce the financial risks to farmers during bad years (inclement weather conditions, insect infestations, etc.). There are numerous ways to develop and run a CSA, and there is a fair amount of literature on the subject. An important consideration is to hire or lease the land to an experienced farmer who can oversee the farming operation and communicate the benefits of a CSA to the community. For information on CSAs visit www.biodynamics.com (1-888-516-7797), www.nal.usda.gov/afsic/csa, and/or contact:

Robyn Van En Center for CSA Resources
Chambersburg, PA
www.csacenter.org

An alternative to a CSA is a community garden. Such gardens permit, through a lottery or permit system, Willistown residents to garden a certain area of a larger community garden. Produce could be sold on-site to benefit the Preserve, donated to other worthy causes, or taken home for consumption.

As a second option, a Farmers Market is a less intense approach to promoting agriculture at Okehocking, but has many of the same benefits. Local growers and producers can bring their products to a central location to sell, thereby promoting local agriculture. Community members benefit by obtaining fresh, local products and by interacting with the producers, creating a greater sense of community.

A Farmers Market may be appropriate across Garrett Mill Road in the Garrett Mill Park parking area. This park has ample parking and visibility from West Chester Pike, and the location is more appropriate for frequent ingress and egress.

For information on setting up a farmers market, go to:
Pennsylvania Association for Sustainable Agriculture (PASA)

114 West Main Street
PO Box 419
Millheim, PA 16854

Implementation Strategy
Thoroughly examine the options discussed above and consider the most appropriate location for agricultural operations pursuant to the terms of the conservation easement and restrictions on land use by land acquisition grant funders (Chester County and the State Department of Conservation and Natural Resources). The Grant funders and easement holder should be notified of any agricultural operations that are being planned for the Preserve and approve of the proposed operations in concept. Issues to be considered include: impacts to streams, sources of water, overall woodlands and meadow management practices, uses of fertilizers, and impacts on wildlife.

G. Security Management

Goal: Ensure that the Okehocking Preserve is a safe place for all visitors; in addition, ensure the protection of the Preserve's wildlife, habitat areas, historic structures, vegetation and recreational resources.

The safety of all visitors and the protection of the Preserve's resources are critical to the operation of the park. The natural resources, recreational opportunities and beauty of the Okehocking Preserve are to be enjoyed without the fear of crime or vandalism.

Implementation Strategy
To ensure that no vandalism occurs or any criminal act takes place within the Okehocking Preserve, security will consist of a regular police presence, in the form of routine drive-bys and monitoring of special events or Township functions. The Township Police Department will expel visitors past park hours.

H. Preserve Maintenance Issues

Goal: Routine maintenance of all Preserve areas, including tasks listed below, will be performed or sub-contracted by Willistown Township.

The responsibility of maintenance at the Okehocking Preserve lies with the office of the Director of Parks and Preserves, in conjunction with the office of the Township Manager. Consideration should be given to hiring an Assistant Property Manager who could reside in the Garrett House and/or hold an office there for Preserve business. Should the position be filled, this individual will report to the Director of Parks and Preserves. Please note that many monitoring tasks, in addition to maintenance tasks, are also the responsibility of the parties mentioned above (see management/maintenance task sheets contained in Appendix 5) with assistance from partner organizations, the Township Environmental Advisory Council, the Parks and Recreation Board, and other organizations as appropriate.

Areas of the Preserve that require upkeep and maintenance include the trails, mowed meadows and other areas, parking facilities, access roads, historical resources, spray irrigation system, restoration plantings, deer deterrent devices, and weed management and invasives control. The

Assistant Property Manager or responsible party will also need to be at the forefront of weed management and invasive species control within the Okehocking Preserve.

Objective 1: *Trail Maintenance*

Maintenance of the trail system corresponds with the monitoring activities for trails described herein. Any areas of erosion or plant loss due to over use must be stabilized and replanted immediately. On the rare occasion that erosion cannot be effectively managed, the Township may need to modify the location of a trail. Trail maintenance includes keeping the grass height of the trails to a range between 4 and 6 inches.

Objective 2: *Mowing*

Within Okehocking Preserve mowing is used to keep trails walk-able and safe for visitors, and to control invasive species growth in the meadow areas. Ultimately, the Township would like to mow no more than one time per year. As mentioned above, trail grass should be kept between 3 and 6 inches in height. Meadow areas will have a concise but more infrequent mowing schedule, and will be slated for managed burning every 5 years as necessary.

Figure 8, Meadow Inventory, identifies the various meadows that exist on the property. In general, mowing will be at a minimum, and priority spot and full mowing will be regulated by invasive species management. Maintenance issues for each follow:

Area 1. Meadow mowing in this area is intended to provide low-impact recreation and, to the degree possible, habitat for grassland birds (eastern meadowlarks, bobolinks, Savannah sparrows, etc.), songbirds and other wildlife. It is unclear at this point whether these meadows will contribute appreciably to grassland bird habitat given their size, the other intended uses for these meadows, and the intent to restore Delchester Run's riparian area. There have been some sightings of meadowlarks and some bobolinks, among other grassland species on the property (See Attachment 4, the Valley Forge Audubon Society [VFAS] Bird Census.) According to the VFAS, Okehocking is not a viable site for a significant array of grassland bird species because there is not enough contiguous acreage of grassland habitat to support them. Moreover, managing specifically for grassland birds does not meet the Township's multilayer use and management goals and objectives for Okehocking Preserve. The VFAS recommends consideration be given to planning for songbirds (warblers) in these meadows who will nest here as a part of the neotropical migratory flyway (birds that nest in the U.S. and Canada and winter in Mexico and points south). Waiting until July 15 (or later) to mow gives nesting grassland and song birds a chance to fledge their young. (Consideration of birds sighted utilizing the meadows and their nesting timing may help define best mowing times.) One problem associated with this mowing schedule is the growth of invasives such as Canada thistle and Russian olive. In order to sustain this type of schedule it may be necessary to institute a spot mowing program or spraying program, or to mow for the invasives until the populations can be managed by spot mowing or spraying. In any event, mowing or spraying must be done on this entire area prior to any invasives going to seed.
Note: long-term management of this area will entail reforestation of portions of sections 1a and 1c to link the forested land south of Delchester Run with the forested land north of Ridley Creek. Reforestation will provide useful habitat to other bird species and wildlife, promote reforestation regionally, enhance the migratory bird flyway, and reduce mowing needs.

Area 2. Mowing of the irrigated fields, planted in reed canary grass (*Phalaris arundinacea*), is harvested and removed from the site currently twice per year. According to the Township engineer (Yerkes Associates, Inc.), optimally the fields should be mown at a minimum every third month starting in the end of April through the end of October so that the spray heads are easily visible to the mower operator and the vegetation does not impair proper operation of the spray heads. As described in Section 3, this area is intended for water reclamation pursuant to the spray irrigation of treated wastewater. Removal of the reed canary grass reduces the potential for nutrient build-up in the soil. Although mowing will be a minimum of 3 times per year, this area provides habitat for wildlife and should be monitored accordingly.

Area 3. Area 3a must be planted or over seeded with an appropriate seed mix to accommodate mowing for community events. Currently the field has been seeded in warm season grasses which will not hold up to the planned use for the site. Ernst seed or other seed companies should be consulted for recommendations of an optimal environmentally beneficial seed mix that will hold up to relatively frequent mowing. In the meantime, the meadow should be managed for invasive species control and wildlife use. Area 3a currently contains a significant thistle population and will need additional herbicide applications and/or earlier yearly mowing (preferably June or there about). Given that meadow area 3a is currently used for Township events and will be used for active recreational purposes, priority should be given to better managing the grasses in section 3a by installing a seed mix tolerant of periodic mowing and restoring the riparian area in section 3b.

Objective 3: *Parking Facilities and Access Roads*

All parking facilities and access roads are to be monitored and maintained to prevent any unnecessary deterioration and erosion. For the repair of any potholes or large cracks, the Director of Parks and Preserves will need to contract for repairs. Parking areas will not be maintained (plowed or salted) during the winter months.

Objective 4: *Historical Resources*

The standing historical resources should be maintained in keeping with English Quaker architecture and style. Archeological remains should be Preserved "as is," in other words, sites should be periodically weeded and/or mowed, checked for deterioration, and Preserved in their current state or managed appropriately. Should the Township consider building an education/community center on the Garrett Barn site, stone from the foundation could be incorporated into the new facility and an historic marker placed in recognition. The Director of Parks and Preserves will need to approve any necessary repairs to the Preserve's historic resources.

Objective 5: *Spray Irrigation System*

The Director of Parks and Preserves is to maintain communication with Yerkes Engineering regarding the maintenance of the spray irrigation system. Visual monitoring of the spray irrigation system by Yerkes Engineering will detect any malfunctions. Conceivably, an Assistant Property Manager would be able to assist Yerkes Engineering with monitoring activities.

Objective 6: *Restoration Planting and Deer Deterrent Maintenance*

The success of all vegetative restoration efforts within the Okehocking Preserve will depend on the protection of the plantings from white-tail deer. Along with monitoring the restoration areas, the Assistant Property Manager or responsible party will be responsible for the upkeep of the restoration areas. This responsibility will entail monitoring the health of plantings and assessing any soil or watering needs, checking leaves for deer browse, checking stem bases for rodent girdling, and most importantly ensuring the use of most effective deer and rodent deterrent devices and assessing their effectiveness in the field. If selected deer deterrent devices are not working, the Assistant Property Manager or responsible party must decide what additional actions can be taken and carried out that will ensure the survival of restoration plantings. Until an Assistant Property Manager is hired, the Director of Parks and Preserves will ensure the execution of these efforts prior to approving any improvement projects.

Objective 7: *Weed Management and Invasive Species Control*

Maintenance of the vegetation within Okehocking Preserve will entail weed management, invasive species control, native plant establishment and protection of healthy native plant communities. The degree of the infestation and methods of control for specific invasive species are detailed in Section three of this document.

As defined by the PA DCNR Department of Forestry, an “Invasive plant" is really another name for an introduced species that has become an environmental weed pest, that is, a plant that grows aggressively, spreads, and displaces other plants. Invasive plants are noted for their ability to grow and spread aggressively and can be trees, shrubs, vines, grasses, or perennial or herbaceous plants which can reproduce rapidly by roots, seeds, shoots, or all three. Invasive plants tend to: 1) not be native to North America, 2) spread, reproducing by roots or shoots, 3) mature quickly, 4) if spread by seed, produce numerous seeds that disperse and sprout easily, 5) be generalists that can grow in many different conditions, and 6) be exploiters and colonizers of disturbed ground.

Implementation Strategy

1. Prioritize Management Actions

Priorities will be set in the hope of minimizing the total, long-term management staff workload. Therefore, priorities will be to act to prevent new infestations and assign highest priority to existing infestations that are the fastest growing, most disruptive, and affect the most highly valued area(s) of the Preserve. Consideration will also be given to the difficulty of control, giving higher priority to infestations that are most likely to be controlled with available technology and resources. In other words, mature stands of weeds will be managed not to expand, while manageable infestations will be addressed for reclamation. *(Following guidance taken from: The Nature Conservancy Wildland Invasive Species Program - Site Weed Management Plan Template, July 2001.)*

A. Setting Priorities

1. Categories of invasive specie management priority setting factors:

1.1 current extent of the species on or near the site;
1.2 current and potential impacts of the species;
1.3 value of the habitats/areas that the species infests or may infest; and

1.4 difficulty of control, ability to manage with current technology.

The Nature Conservancy (TNC) emphasizes the importance of the current extent of the species category, and suggests it be used first. In the long run, it is usually most efficient to devote resources to preventing new problems and immediately addressing incipient infestations. Priority will be given depending upon the current conditions of the Preserve.

2. Modified TNC suggested ranking guidelines follow. For each category, situations that follow the letter "A" should receive the highest priority, followed by "B" and so forth.

I. Current extent and patch size
- A. Species not yet on the site but which are present nearby. Pay special attention to species known to be pests elsewhere in the region.
- B. Species present as new populations or outliers of larger infestations, especially if they are expanding rapidly.
- C. Species present in large infestations that continue to expand.
- D. Species present in large infestations that are not expanding.

II. Current and potential impacts of the species:
- A. Species that out-compete natives and dominate otherwise undisturbed native communities.
- B. Species that alter ecosystem processes such as hydrology, nutrient cycling, or other ecosystem processes and management processes such as controlled burning. Species that are able to prevent germination by natives and deplete resources needed by the native fauna, such as cover and food.
- C. Species that do not out-compete dominant natives but:
  1. Prevent or depress recruitment or regeneration of native species (for example, the forest understory weed garlic mustard may depress recruitment by canopy dominants); or
  2. Reduce or eliminate resources (e.g., food, cover, nesting sites) used by native animals; or
  3. Promote populations of invasive non-native animals by providing them with resources otherwise unavailable in the area.
- D. Species that are only able to invade disturbed areas.
- E. Species that are ephemeral to a particular site.

III. The value of the habitat that the species has infested or has the potential to infest
- A. Infestations that occur in the most highly valued habitats or areas of the site - especially areas that contain rare or highly valued species or communities and areas that provide vital resources.
- B. Infestations that occur in less highly valued portions of the site. Areas already badly infested with other weeds may be given low priority unless the species in question will make the situation significantly worse.

IV. Difficulty of control and establishing replacement species:
- A. Species likely to be controlled or eliminated with available technology and resources and which desirable native species will replace with little further input.
- B. Species likely be controlled but will not be replaced by desirable natives without an active restoration program requiring substantial resources.

C. Species difficult to control with available technology and resources and/or whose control will likely result in substantial damage to other, desirable species.
D. Species unlikely to be controlled with available technology and resources.

2. For priority invasive management projects, see Appendix 5, Priority Improvement Projects, Okehocking Preserve 2006 – 2010.

3. Employ Integrated Weed Management methods when possible:

(Sources: The US Department of Agriculture, The Nature Conservancy, Colorado Natural Areas Program, Penn State University, and the PA DCNR Bureau of Forestry.)

A. Summary

No single management technique is perfect for all weed control situations; further, controlling weeds with one or two techniques gives the weeds a chance to adapt to those practices. For example, the use of herbicides with the same mode of action (belonging to the same herbicide group) year after year has resulted in weeds that are resistant to those herbicides. Multiple management actions are required for effective weed control. The strategy of using an integrated selection of management techniques has been developed for use in a variety of "pest" control situations, including plant pests, or weeds. Integrated Weed Management (IWM) is a process by which one selects and applies a combination of management techniques (biological, chemical, mechanical, and cultural) that, together, will control a particular weed species or infestation efficiently and effectively, with minimal adverse impacts to non-target organisms. IWM uses a variety of control techniques to keep weeds "off balance". Weeds are less able to adapt to a constantly changing system that uses many different control practices, unlike a program that relies on one or two weed control tools. IWM management techniques will be selected and applied within the context of this Preserve Management Plan.

Most traditional weed management treats only the symptoms of weed infestation, typically by using herbicides to kill weeds. IWM differs from ordinary weed management in attempting to address the ultimate causes of weed infestation, rather than simply focusing on controlling weeds. Although focusing on the fundamental causes of weed invasion and persistence is more demanding than simply spraying weeds, the rewards are far greater and are worth the effort.
Over the long run, IWM should lead to greater success in meeting management objectives.

IWM is "predicated on ecological principles and integrates multidisciplinary methodologies in developing ecosystem management strategies that are practical, economical and protective of public and environmental health" (Colorado Natural Areas Program, Piper 1991). IWM seeks to combine two or more control
actions which will interact to provide better control than any one of the actions might provide. However, even if multiple control actions do not interact, their additive effects can mean the difference between success and failure. In addition, employing multiple control actions should increase the likelihood that at least one of them will control the target weed species.

IWM is species-specific, tailored to exploit the weaknesses of a particular weed species, site specific, and designed to be practical with mimimal risk to the organisms and their habitats.

B. General Principles

IWM requires an understanding of the biology and ecology of the weed species and its environment before selecting control actions. With scientifically valid information, landowners and managers can select the most effective, efficient, environmentally sound and socially acceptable methods to control weeds (Colorado Natural Areas Program, Brown et al. 1999). Weed profiles and management abstracts should be thoroughly researched and understood before developing IWM approaches for the problem weed species. Once an identification of which species and which infestations are high priority for control, the following general principles and strategies should be used in the selection of control measures and formulation of an IWM plan.

1. Work to establish and maintain functioning native communities

a. Land Use Practices

Land use practices can help or hinder the spread of weeds. Look for instances where irrigation, haying, or recreational use may be contributing to the degradation of native plant communities, or otherwise promoting the invasion and spread of noxious weeds, and take steps to alter these practices as necessary.

b. Restoration and Revegetation

One way to combat the problem of invasive noxious weeds is to use native plants for landscaping, revegetation, and reclamation. IWM considers the broader natural systems in which a weed species or infestation occurs and attempts to manipulate these systems in ways that result in control of the weeds in question. Control often is geared toward improving the health of desirable plant communities so they can withstand future weed invasion. Use native species for reseeding, and plant native trees or shrubs as appropriate. Encourage the growth and persistence of native species by taking care not to damage them or alter their habitat with land management practices.

2. Implement appropriate prevention methods

IWM also includes combining preventive measures with normal land management activities and weed control actions. Preventing weeds from invading a site is the most effective and least costly method for controlling weeds. Ensure that control actions do not contribute to the spread of
noxious weeds.

3. Choose appropriate control actions

Selecting appropriate control actions requires a detailed knowledge of the biology and ecology of the target weed species. The selected control actions should ideally be ones that are:

a. Applied at the most effective time

Most control actions are effective only during certain periods of the target species' life cycle. Treatments should be applied at the point in the life-cycle of the weed when it is most vulnerable, *and* at a time when the least damage will be done to its natural predators and other non-target species.

b. Least damaging to non-target organisms, including natural weed control organisms

Managers should carefully consider the likely effects of available control techniques on both target and non-target species before deciding which combination of control measures to use. Non-target organisms may include sensitive species, native plant communities, wildlife, areas revegetated to control weeds, insect pollinators, insects that feed on target weed species, and plant species that compete with the weeds you are trying to
control. The selected control actions must not significantly damage these non-target organisms or lead to the creation of further problems.

c. Least hazardous to human health.
Herbicides can be injurious to human health if not used correctly. In fact, one of the driving forces behind IWM is the reduction of unnecessary pesticide use. Chemicals should be carefully chosen to minimize their potential toxicity to humans. Successful weed management involves more than just spraying weeds. Similarly, mechanical tools such as mowers and chainsaws can be dangerous if not handled properly. Ensure managers are familiar with the proper operation of such tools.

d. Least damaging to the general environment.
Using herbicides judiciously is important to avoid environmental contamination, especially around water. Certain formulations of herbicides cannot be used in aquatic situations or where ground water is close to the ground surface. In addition, timing of herbicide application is important to maximize the effectiveness of the chemical on the target weed, as well as to reduce the possibility of adverse side effects.

e. Most likely to reduce the need for weed control actions over the long-term.
Control techniques fall into two general categories: those that seek to prevent weeds from establishing, and those that deal with weeds which are already present. Preventive and cultural measures to reduce soil disturbances or to reduce the input of weed seeds to an area, re-seeding existing disturbed lands, and altering mowing practices to promote more vigorous stands of perennial plants are actions which work to prevent weed establishment. Actions which address existing weeds include pulling, mowing, applying herbicide, prescribed burning, grazing or releasing biological control insects. Any combination of these management actions which addresses the underlying causes of weed infestation and spread is likely to be the most beneficial for controlling weeds over the long run.

f. Most easily implemented
Control techniques which are easier to apply are more likely to be completed, and therefore most likely to have an effect on weeds.

g. Most cost-effective in the short and long term
Consider the benefits and the costs of the possible control actions. For example, is the potential damage to desirable vegetation from an herbicide worth the risk? Is the potential for contaminating a stream with an herbicide outweighed by the benefits of controlling a noxious weed? Is the potential for spreading weed seeds by driving your vehicle into an area infested by weeds outweighed by the increased ease of controlling weeds?

C. General Strategies

Weed management actions need to support the Okehocking land management goals and weed management objectives.

1. Generally, weed control objectives will be to eradicate, suppress or contain weed populations. These objectives fall along a gradient and are often intertwined. For example, to prevent the spread of new invasions, a manager may decide to control the reproductive capabilities of an existing patch of weeds. This control, undertaken for a significant length of time, could weaken a population to a point where the manager may feel that eradication is possible. IWM prescriptions potentially include the full range of control actions including pulling, mowing and cutting, livestock grazing, cultural controls, herbicides, prescribed burning, and biological control agents.

a. Eradicate - means completely eliminating all weed plants, including live roots, rhizomes and seeds. Eradicating a weed species on a management area is very difficult unless it is present in small numbers. Eradication is usually done on a small scale due to the difficulty and expenses of eliminating larger established patches of weeds. Eradication should be undertaken any time a newly arrived weedy individual or small weed patch is detected.

b. Suppress - means to reduce the abundance of a weed species, typically as measured or estimated in terms of canopy cover or plant density.

c. Contain - means confining an infestation so it does not expand, but does not usually mean reducing the current infestation. The focus is on inhibiting both sexual and vegetative reproduction.

Management actions must be tailored to the level of control being seeked. For example, biocontrol agents might be appropriate for suppressing a weed population but not for eradicating a population.

D. General Control Actions and Methods

1. General management methods of preventing new infestations:

a. Limit weed seed dispersal by removing flower heads prior to seed development

b. Contain neighboring weed infestations

c. Minimize soil disturbance

d. Detect and eradicate weed introductions early when population densities are low (This gives the most immediate success because invasive plant control works best where there is a functioning native plant community still in place that can move right into the empty niche left by the removed invasive.)

e. Replace invasive plants with native species and establishing them as competitive native plant communities

f. Properly manage and protect healthy native plant communities - Meadows in Pennsylvania may need to be mowed every year, and woodlands are probably the lowest-maintenance landscape; but they too will need to be monitored and invasive plants controlled where feasible.

g. Monitor (and continuously scout for invasives or other problems conducive to invasive introduction)

i. Conduct deer management

j. Do not use known invasive plants and educate others about the problems of invasives

k. Limit use of fertilizers. (High nitrogen levels sometimes give an advantage to weedy species that are better adapted to using plentiful nutrients for explosive growth.)

2. General IPW management methods for large weed infestations

a. Prevent weeds from spreading
b. Use appropriate types of livestock to graze and thereby weaken weed plants and/or reduce seed production without damaging desirable plants
c. Re-seed with a mixture of competitive, desirable plants, especially grasses, that span the spectrum of growth periods (cool- and warm-season plants) and rooting depths (shallow and deep rooted)
d. Release biological control insects to weaken weed plants and reduce seed production
e. Spray with an herbicide selected to provide maximum weed control without damaging existing or newly seeded desirable plant species

3. A successful IWM program must be tailor-made for each situation. There is no cook-book solution that will work everywhere. However, certain combinations of control actions have been successful and are worthy of consideration:
a. Mowing or cutting plus herbicide (see case study of Canada thistle, Colorado Natural Areas Program. *Creating an Integrated Weed Management Plan: A Handbook for Owners and Managers of Lands with Natural Values.*)
b. Spraying with herbicide followed by reseeding with competitive plant species followed by hand-pulling of residual weed plants
c. Cutting woody plants followed by herbicide application
d. Grazing plus reseeding with competitive plant species plus introducing biological control insects
e. Introducing biological control insects with periodic herbicide application (see purple loosestrife case study, Colorado Natural Areas Program. *Creating an Integrated Weed Management Plan: A Handbook for Owners and Managers of Lands with Natural Values.*)
f. Spraying with herbicide followed with re-seeding with competitive perennial grasses
g. Re-seeding with competitive grasses followed by altered livestock grazing regime
Note: Herbicides must be applied in conformance with the label. With herbicides, the label is the law. Applying an herbicide beyond the bounds specified on the label is illegal.

E. For the Invasive Plant Management Timeline, from Delaware RiverKeeper Network, see Appendix 5.

F. For further information and updates on Integrated Weed Management methodology and invasive species:

1. Colorado Natural Areas Program, Colorado Department of Natural Resources: *Creating an Integrated Weed Management Plan: A Handbook for Owners and Managers of Lands with Natural Values*: *http://parks.state.co.us/cnap/IWM_handbook/IWM_index.htm*
2. The Department of Conservation and Natural Resources (DCNR) Abstracts: http://www.dcnr.state.pa.us/forestry/wildplant/invasive.aspx
3. DCNR Invasive Tutorial: http://www.dcnr.state.pa.us/forestry/invasivetutorial/index.htm
4. National Park Service Abstracts: http://www.nps.gov/plants/alien/index.htm.
5. The Nature Conservancy *Wildlands Invasive Species Program* Abstracts: http://tncweeds.ucdavis.edu/esadocs (See Appendix 3 for sample).
6. Appendix 5 in this document: Invasive Plant Management Timeline from Delaware RiverKeeper Network (215-369-1188), and the Invasive Species Checklist.
7. United States Geologic Service: http://www.usgs.gov/ - go to the Library Homepage
8. Penn State University Weed Management Abstracts: http://weeds.cas.psu.edu/

I. Preserve Improvements.

Goal: To fully install the improvements intended for the Preserve, assess the usefulness of such improvements over time, and make additional improvements as necessary.

The responsibility of Preserve improvements lies with the office of the Director of Parks and Preserves, in conjunction with the office of the Township Manager. Execution of the improvements will be accomplished with assistance from Okehocking Partners and/or the Township EAC or Park and Recreation Board, or other organizations as appropriate. Many of the improvements identified in Figure 10 have already been made. As such, the primary responsibility will be to monitor such improvements and maintain them over time.

In addition, it will be important to assess the usefulness and effectiveness of the improvements over time. For example, are parking areas being used effectively? Are signs appropriately placed? Are there enough benches throughout the Preserve?

Also important is the need to consider additional improvements as necessary to enhance visitors' appreciation of the Preserve. For example, it has been identified that additional signage may be needed to ensure that dogs do not disturb the area in and around the Ice Dam (current intrusion in this area has eradicated streamside vegetation and contributed to erosion; additional erosion is attributable to aged and malfunctioning mill race diversion gate. In addition, the Township may find that additional interpretive signage will be helpful in identifying historic resources or other park amenities (stream names, tree species, management efforts, etc.). Some interpretive signage is suggested in this plan; additional signage could be considered in the future.

OKEHOCKING PRESERVE MANAGEMENT PLAN

REFERENCES

REFERENCES

Pennsylvania. Willistown Township. Nagy and Goulding. 2006.
"Acres of Quakers". Proposed publish date: June 2006.

Brown, et al., Colorado Natural Areas Program. 1999.
Creating an Integrated Weed Management Plan: A Handbook for Owners and Managers of Lands with Natural Values. Colorado Natural Areas Program, Colorado State Parks, Colorado Department of Natural Resources; and Division of Plant Industry, Colorado Department of Agriculture. Denver, Colorado. 349 pages.
http://parks.state.co.us/cnap/IWM_handbook/IWM_index.htm

2000 Census. www.census.gov/census2000/states/**pa**

Chester County Planning Commission, 2005.
Website data regarding U.S. Census and County demographic data and estimates

DVRPC (Delaware Valley Regional Planning Commission), 2005.
Website data regarding U.S. Census and DVRPC demographic data and estimates

Delaware RiverKeeper Network, 2004.
"Invasive Plant Management Timeline", Excel document.

Delaware County Anglers and Conservationists. Consultations with Steve Kosiak. 2005, 2006. 610-649-3442.

Ebert, Janet. Botanist. Consultations 2006. 610-459-0585.

National Park Service Abstracts. Web site periodically updated.
http://www.nps.gov/plants/alien/index.htm.

The Nature Conservancy. Web site periodically updated.
Wildlands Invasive Species Program Abstracts: http://tncweeds.ucdavis.edu/esadocs
The Nature Conservancy, 2001. From web site.
The Nature Conservancy Wildland Invasive Species Program - Site Weed Management Plan Template.

Natural Lands Trust. Consultations with Darin Groff and Gary Gimbert. 2005. 610-353-5587.

Natural Resources Conservation Service. Consultations with Sam High. 2005, 2006. 610-696-0398.

Penn State University Weed Management Abstracts, web site periodically updated.
http://weeds.cas.psu.edu/

Pennsylvania. Department of Conservation and Natural Resources Abstracts. Web site periodically updated. http://www.dcnr.state.pa.us/forestry/wildplant/invasive.aspx
Pennsylvania. Department of Conservation and Natural Resources. Web site periodically updated.
http://www.dcnr.state.pa.us/forestry/wildplant/
Pennsylvania. Department of Conservation and Natural Resources. 2004.
Pennsylvania Recreation Plan 2004-2008.

Robyn VanEn Center for Community Supported Agriculture. Web site periodically updated.

Willistown Township, 1997
"Guidelines for Growth," The Willistown Township Comprehensive Plan

Vernal Pool Association. Web site periodically updated.
http://www.vernalpool.org/vernal_1.htm

Valley Forge Audubon Society. Consultations with Edie Parnum. 2005. 610-647-3688.

Yerkes Associates. Consultations with Matthew Boggs. 2005, 2006. 610-644-4254.

OKEHOCKING PRESERVE MANAGEMENT PLAN

APPENDICIES

OKEHOCKING PRESERVE MANAGEMENT PLAN

APPENDIX 1

Figures

FIGURE 1: LOCATION MAP

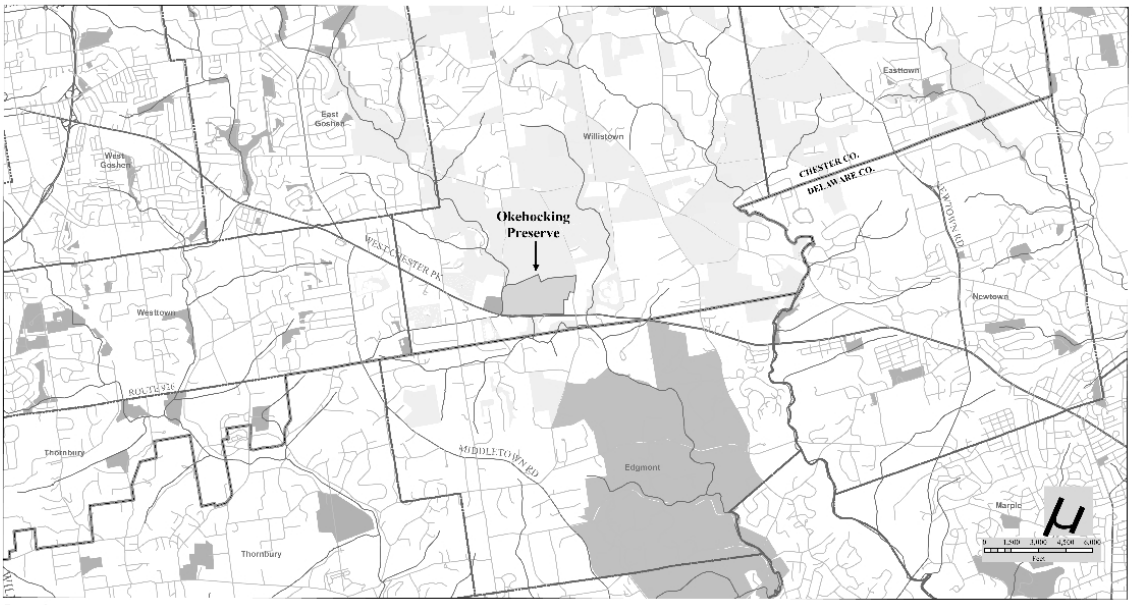


FIGURE 2: AREA PHOTOGRAPHY BASE MAP

FIGURE 3: NATURAL FEATURES

FIGURE 4: AQUATIC RESOURCES AND SOILS

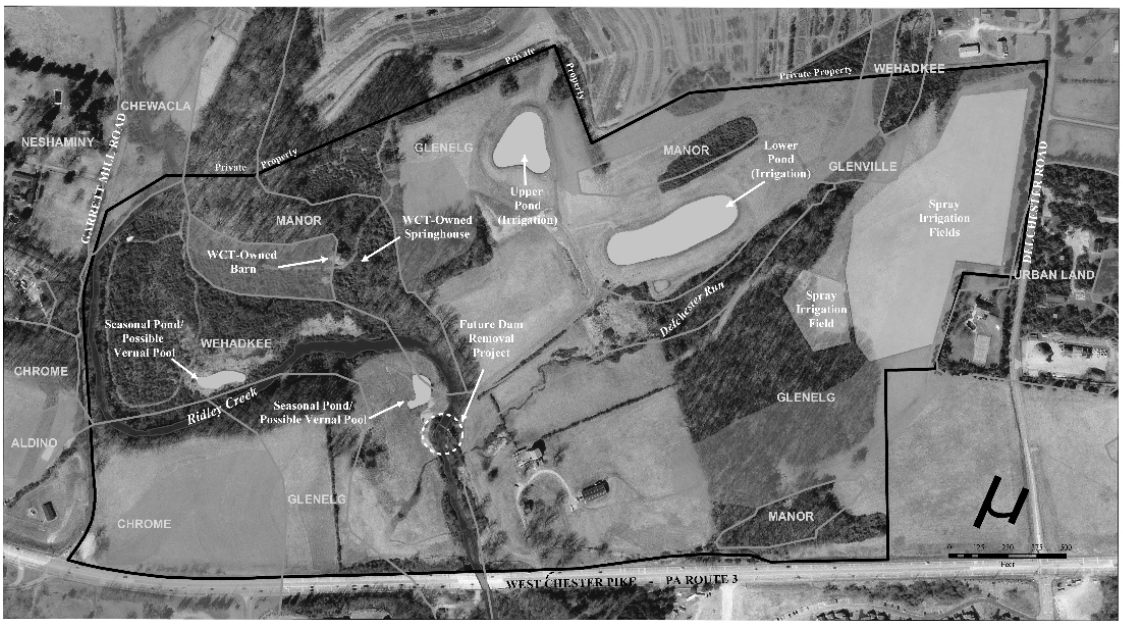


FIGURE 5: SCENIC RESOURCE INVENTORY AND PHOTO LOG

Legend

- Scenic Accent: Contributes to scenic landscape
- Scenic Vista Point: Affords broad, expansive views
- Scenic Intrusion: Detracts from scenic landscape
- Photograph site, number, and direction

Okehocking Preserve Management Plan
December 2005

gaadt | perspectives, LLC

WILLISTOWN CONSERVATION TRUST

Okehocking Preserve Scenic Resource Inventory and Photo Log Figure 5

FIGURE 6: HISTORIC RESOURCES

Okehocking Preserve Management Plan
December 2005

gaadt | perspectives, LLC

WILLISTOWN CONSERVATION TRUST

Okehocking Preserve Historic Resources Figure 6

FIGURE 7: TRAILS AND RECREATIONAL USE

FIGURE 8: MEADOW INVENTORY

FIGURE 9: WOODLAND INVENTORY AND PRIORITY IMPROVEMENT PROJECTS

Legend

- 1: Mature Woodland
- 2: Old Field/Scrub Woodland
- 3: Mid-Successional Woodland
- 4: Priority Riparian Restoration Areas
- 5: Hedgerow-Isolated Stand
- R: Hedgerow to be Removed

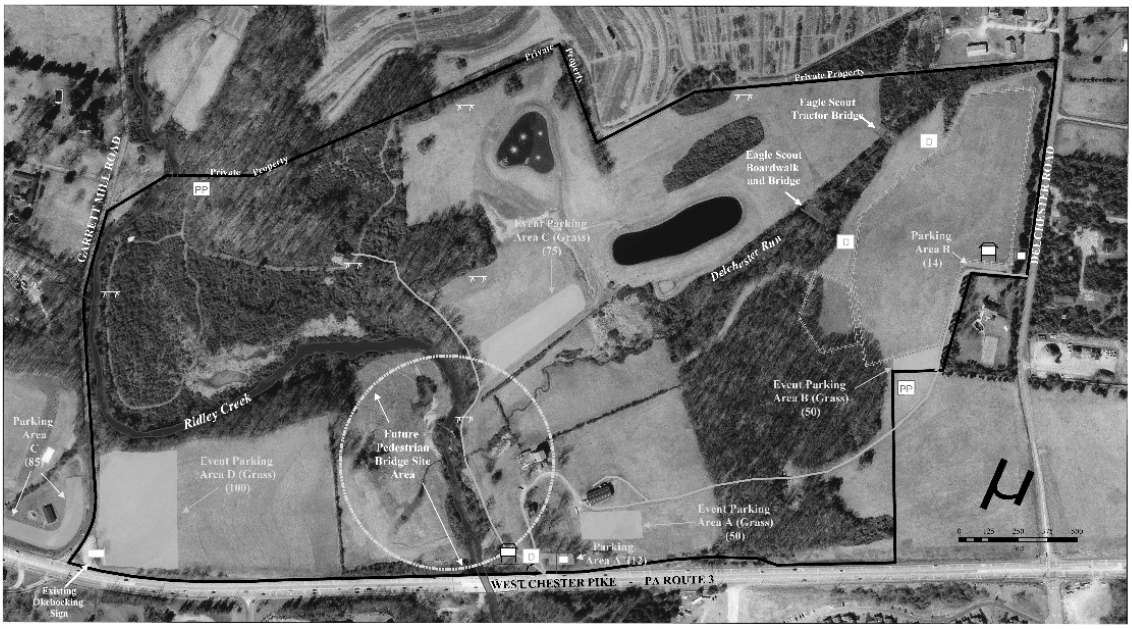
Okehocking Preserve Management Plan
December 2005

WILLISTOWN CONSERVATION TRUST

gaudi | perspectives, LLC

Okehocking Preserve Woodland Inventory and Priority Improvement Projects Figure 9

FIGURE 10: IMPROVEMENTS



Legend

- Existing Fences
- Access Drives
- Creeks and Tributaries
- Parking Areas
- Event Parking Areas
- Benches
- Display Cases
- Entrance Signs
- Private Property Signs
- Dog or Leash Signs

Okehocking Preserve Management Plan
December 2005

WILLISTOWN CONSERVATION TRUST

gaudi | perspectives, LLC

Okehocking Preserve Improvements Figure 10

OKEHOCKING PRESERVE MANAGEMENT PLAN

APPENDIX 2

Check List of Reptiles and Amphibians
mphibians

CHECK LIST OF THE REPTILES AND AMPHIBIANS OF THE ASHBRIDGE AND OKEHOCKING PRESERVES

Prepared for the Willistown Conservation Trust
By
SKIP CONANT

Amphibians

Frogs
American Toad (Bufo americanus)
Bull Frog (Rana catesbeiana)
Green Frog (Rana clamitans melanota)
Wood Frog (Rana sylvatica)
Pickrel Frog (Rana palustris)
Spring Peeper (Pseudacris crucifer)
Possible
Gray Tree Frog (Hyla versicolor)

Salamanders
Northern Dusky Salamander (Desmognathus fuscus)
Northern Two-lined Salamander (Eurycea bislincata)
Eastern Red-backed Salamander (Plethodom cinereous)
Northern Red Salamander (Pseudotritor ruber ruber)
Possible
Long-tailed Salamander (Eurycea longicauda)
Red-spotted Newt (Notophtalmus viridescens)
Spotted Salamander (Ambystoma maculatum)

Turtles
Snapping Turtle (Chelydre serpentina)
Painted Turtle (Chrysemys picta X marginata)
Stinkpot (Sternotherus odoratus)
Box Turtle (Terrapene carolina)
Spotted Turtle (Clemmys guttata)
Possible
Wood Turtle (Clemys insculpta)

Snakes
Northern Watersnake (Nerodia sipedon)
Eastern Garter Snake (Thamnophis sirtalis)
Eastern Milk Snake (Lampropeltis triangulum)

Possible
Black Racer (Coluber constrictor)
Black Rat Snake (Elaphe obsoleta)
Eastern Ribbon Snake (Thamnophis sauritus)
Northern Ring-necked Snake (Diadophis punctatus edwardsi)
Northern Brown Snake (Storeria dekayi)

OKEHOCKING PRESERVE MANAGEMENT PLAN

APPENDIX 3

Global Invasive Species Initiative—
The Nature Conservancy (excerpts)

http://tncweeds.ucdavis.edu/control.html

The Plant Conservation Alliance Website:
"Weeds Gone Wild"

www.nps.gov/plants/alien

ISI

The Global Invasive Species Initiative

The Nature Conservancy
SAVING THE LAST GREAT PLACES ON EARTH

ISI Home

Invasives 101

TNC projects

Invasives planning & strategies

>Invasives & control methods
On invasive plants
On invasive animals & pathogens
Gallery of pests
Methods handbook
Tool reviews
1999 survey
Global weed list

Photo archive

Red alerts!

Global resources

Invasives news

Links & internet resources

Site sponsors

Privacy

Invasive species, control methods, and best management practices

This is where you will find core web site documents such as information about specific plants, animals, or pathogens; our famous "Weed Control Methods Handbook," tool reviews, etc.

Principal site resources

Invasive plant management
Research the information we have on the management of a particular species of invasive plant here.

Invasive animal & pathogen management
Research the information we have on the management of a particular species of invasive animal or pathogen here.

Gallery of pests
A rogue's gallery of many of the invasive pests and pathogens that have invaded North America, or that have the potential to do so.

Weed Control Methods Handbook
An electronic handbook provides detailed information on the use of manual and mechanical techniques, grazing, prescribed fire, biocontrol, and herbicides, to help you control undesirable invasive plants.

Tool reviews
Read our reviews of hardware that are useful for those working in invasive species management.

1998-99 survey
Learn about our 1999 survey--a snapshot of invasive species issues across all of The Nature Conservancy.

Global weed list
An extraordinary database consisting of invasive plant lists, observations, and publications. Look here to learn if a plant has been observed acting as an invader.

Other site resources

Weed Information Management System (WIMS)
A fully-integrated hardware and software application for mapping invasives and tracking management actions.

Remote sensing
A review of remote sensing technology, as applied to invasive species detection and mapping.

Photography archive
One of the largest collections of photographs of invasive species (mostly plants) available on the web.

Red Alerts!
Species which are either new to an area, or are showing alarming symptoms such as signs of signicant, new expansion.

State & country programs
Profiles of noteworthy invasive species work being done by state and country programs in The Nature Conservancy.

Templates and examples
Adaptive management planning tools such as model plans for sites, weed control templates, etc. Very useful!

Listserves
Join our listserve to voice your frustrations and trumpet your successes.

Volunteer coordination and public outreach
Powerpoint presentations on invasive species, weed pamphlets, on developing weed management areas, and more.

Updated January 2005
©The Nature Conservancy, 2005

Weeds Gone Wild
Alien Plant Invaders of Natural Areas

Search
Go
Search APWG
Search www.nps.gov/plants

What's New

Fact Sheets
Invasive Plants List
Publications & Articles
APWG Action Agenda
Calendars
Recipes

Definitions
The Invasive Problem
What You Can Do
Other Links

E-mail Discussion List
Website Credits
Link to Us

APWG is a PCA Working Group

Weeds Gone Wild > *Home*

Weeds Gone Wild: Alien Plant Invaders of Natural Areas is a web-based project of the Plant Conservation Alliance's Alien Plant Working Group, that provides information for the general public, land managers, researchers, and others on the serious threat and impacts of invasive alien (exotic, non-native) plants to the native flora, fauna, and natural ecosystems of the United States.

Weed Spotlight

This site provides a compiled national list of invasive plants infesting natural areas throughout the U.S., background information on the problem of invasive species, illustrated fact sheets that include plant descriptions, native range, distribution and habitat in the U.S., management options, suggested alternative native plants, and other information, and selected links to relevant people and organizations.

Participation in the Weeds Gone Wild project is open to anyone interested in getting involved and includes federal, State, and local government agencies, non-governmental organizations, universities, private firms and individuals. If you are interested in writing a fact sheet or otherwise helping with this project, please write to: Jil Swearingen, Chair, Alien Plant Working Group, 4598 MacArthur Blvd., NW, Washington, DC 20007, or send an e-mail message. To find out which plant species are in need of fact sheet authors, please check the Scientific Names list in the Plant Lists section.

Fact sheets and other information on this web site may be used (i.e., printed, copied, distributed) for educational purposes without permission, as long as a credit line to the PCA-APWG is included. Materials may not be published or sold. For other intended uses, please contact the APWG Chair.

OKEHOCKING PRESERVE MANAGEMENT PLAN

APPENDIX 4

Audubon Bird Census
(including Important Bird Areas information)
and Observations (Upper Main Line YMCA)

WILLISTOWN CONSERVATION TRUST Program Area Recognized as an "Important Bird Area"!

Audubon Society identifies area as critical for bird conservation efforts.

Audubon PENNSYLVANIA

What is an Important Bird Area?

An IBA is part of a global network of places recognized for their outstanding value to bird conservation.

Habitat loss and fragmentation are the most serious threats facing birds around the world, across America, and right here in Pennsylvania. Unless we slow the rapid destruction and degradation of habitat, populations of many birds may decline to dangerously low levels. The Important Bird Area (IBA) program was established to reverse declining trends in bird population. An IBA is a site that is part of a global network of places recognized for their outstanding value to bird conservation. The IBA program developed from a need for a centralized source of information on important bird habitat, first in Europe, then the Middle East, and now in the United States. Although BirdLife International, a conservation group in Europe, developed the basic IBA program, the National Audubon Society was the first organization to develop it in the United States.

"There are many tools for the conservation of birds," says Steve Hoffman, Audubon Pennsylvania's director of bird conservation. "But the IBA is a very important one, because it identifies a place on the map—on the ground—that says, 'This is a special place for birds.'"

Why is our countryside special for birds?

The Upper Ridley and Crum Creek watersheds of Willistown Township and adjoining areas in East Goshen, Newtown, Edgmont, and Easttown Townships and Malvern Borough have important characteristics to promote bird conservation and public education. These include a history of active conservation in the community – over 24 years and 115 conservation easements, good land management practices, several areas of public access, a diversity of habitat, close proximity to a large population base, existing populations of rare, threatened, and declining (statewide) birds, and a historical record of birds sighted in the area. Local threatened species include the Eastern Meadowlark, the Bobolink, and many neo-tropical migratory species.

We are now named the "Upper Ridley/Crum Important Bird Area"

For all of these reasons, the Pennsylvania Audubon Society chose to expand the existing Ridley Creek State Park and Tyler Arboretum IBA to include the Willistown Conservation Trust program area. This new area has been named the "Upper Ridley/Crum Important Bird Area."

Why was the Trust Program Area selected as an IBA?

- There is strong support from area residents for ecological restoration projects, which has been expressed in a large number of volunteer hours on riparian buffer planting projects and a willingness by landowners to alter mowing schedules to accommodate nesting birds and promote native grasses.
- There remains a great diversity of habitat, thanks in large part to community conservation efforts, including woodlands, hedgerows, vernal pools, meadows, pasture, riparian areas, ponds, wetlands, croplands, and large tracts of open space.
- Willistown Conservation Trust is developing a grassland bird restoration project for its program area. We work with private landowners to alter their mowing regimes to accommodate nesting birds, and promote native grasses.

Continued on reverse...

Sketch by Jon Simmons

Eastern Meadowlark, one of our declining species.

WILLISTOWN CONSERVATION TRUST
Upper Ridley/Crum Important Bird Area

Continued:

- With the guidance of the Willistown Conservation Trust, Willistown Township has begun a grassland bird restoration program on its Okehocking Preserve. It has changed its mowing regime to protect nesting birds, and has partnered with the US Fish and Wildlife Service and the USDA Natural Resource Conservation Service to plant native grasses and wildflowers as well as to plant a riparian buffer along the Ridley Creek.
- The Willistown Conservation Trust has initiated the Upper Ridley Creek Greenway project that will protect a riparian wildlife corridor stretching from East Goshen Township in the north through Ridley Creek State Park and Tyler Arboretum eight miles to the south.
- The Upper Ridley/Crum IBA is less than 20 miles from Center City Philadelphia. This area's already protected lands and yet-to-be protected lands offer an enormous opportunity for bird conservation.

How large is the Upper Ridley/Crum Important Bird Area?

The **Upper Ridley/Crum IBA** encompasses more than 13,000 acres:

- 3,300 acres—Ridley Creek State Park and Tyler Arboretum
- 4,500 acres—already protected lands within the Willistown Conservation Trust program area
- 5,500 acres—critical lands, yet to be protected within the Trust program area

Sketch by John C. Anderton

Bobolinks migrate from South America to nest in our grasslands

Why was Pennsylvania first?

Pennsylvania was chosen to be the first state to begin the IBA process in 1995 for several important reasons:

- Pennsylvania has a strong network of birders, birding organizations, and scientists concerned about habitat issues.

Continued:

- Pennsylvania has a vast amount of quality bird habitat, mainly forests. These areas are a combination of state forest lands, state parks, national forests, and state game lands.
- **Private preserves, land conservancies, and trust properties** also contribute to the overall mass of forest habitat in Pennsylvania.

How many IBAs are there in Pennsylvania?

A group of scientific advisors (known as the Ornithological Technical Committee) has identified **78 IBAs encompassing over one million acres of Pennsylvania's public and private lands**. These areas include migratory staging areas, winter roost sites, and prime breeding areas for songbirds, wading birds, shorebirds, and other species.

What happens now?

Once a site is officially designated as an IBA, volunteer monitoring efforts are initiated. This monitoring focuses primarily on the nesting seasons—tracking the numbers and variety of birds breeding in that particular habitat. But the monitoring also extends to the land itself, focusing attention on the main threats to Pennsylvania's IBA habitats:

- Habitat fragmentation
- Suburban sprawl
- Overbrowsing by deer

Important Bird Areas and Habitat Conservation

Working with private landowners and public land managers, the IBA program is an effective tool to help promote habitat conservation. **Many funders recognize the value of the IBA program.** Funding is currently provided by the Pennsylvania Department of Conservation and Natural Resources' Keystone Land Trusts project, Pennsylvania Department of Environmental Protection's Growing Greener program, Pennsylvania Game Commission, Pennsylvania Wild Resource Conservation Fund, the William Penn Foundation, and other private donations.

For more information: **www.audubon.org/bird/iba**
June 2003

Okehocking Preserve ~ Bird Observations
Spring/Summer 2004

Submitted by Trevor Conlow
Upper Main Line YMCA Environmental Education and Ornithology Instructor

- Spotted Sandpiper first seen at lower pond on May 29, 2004.
- Wood Duck first seen in Ridley Creek, upstream of dam, on May 20, 2004. Two male wood ducks fly to lower pond – June 2, 2004.
- Bobolink first sighted on April 26, 2004. Eleven bobolinks sighted on fence at upper pond in mid-June. No sightings of bobolinks after mid July.
- Eastern Meadowlark first seen on May 7, 2004 at lower end of spray field. Three meadowlarks seen and heard on a regular basis in this area until late August 2004.

Species observed on May 30, 2004:

11:30 AM

Red-winged Blackbird
Turkey Vulture
Northern Flicker
Yellow Warbler
Barn Swallow
Chimney Swift
Eastern Meadowlark
Tree Swallow
Northern Cardinal
Willow Flycatcher
Red-bellied Woodpecker
Song Sparrow
American Robin
Gray Catbird
Field Sparrow
Common Yellowthroat

12:00 PM

Brown Thrasher
Indigo Bunting
Baltimore Oriole
Common Grackle
Canada Goose
Northern Mockingbird
Black Vulture
Red-tailed Hawk
Tufted Titmouse

12:30 PM
American Goldfinch
American Crow
Blue Jay
Wood Thrush
1:00 PM
Eastern Towhee
Red-eyed Vireo
1:30 PM
Carolina Chickadee
Eastern Wood Peewee
2:00 PM
Orchard Oriole
Eastern Kingbird
Wood Duck (female with 11 young on upper pond)
Eastern Phoebe
2:30 PM
European Starling
3:00 PM
Cedar Waxwing
Carolina Wren
White-eyed Vireo
Cooper's Hawk
4:00 PM
House Finch
Eastern Bluebird
Spotted Sandpiper
Rock Dove
Mourning Dove

Species repeatedly observed from mid-May through mid-July 2004:
Red-winged Blackbird
Canada Goose
Turkey Vulture
Black Vulture
Cooper's Hawk
Red-tailed Hawk
Northern Flicker
Red-bellied Woodpecker
Bobolink
Eastern Meadowlark
Yellow Warbler
Common Yellowthroat
Mallard Duck
Wood Duck
Great Blue Heron

Bird Census Chart
(Paper copy only – file too large)

OKEHOCKING PRESERVE MANAGEMENT PLAN

APPENDIX 5

Management Spreadsheets

Appendix 5 OMP **OKEHOCKING PRESERVE PRIORITY IMPROVEMENT PROJECTS 2006 - 2010**

NATURAL RESOURCE IMPROVEMENT PROJECTS

Invasive Specie Priority Projects

- Floodplain multiflora rose, purple loosestrife removal, seed, etc. (*See Figure 9 Priority Project area 1)
- Lythrum salicaria Purple loosestrife removal Delchester Run and east bank of Ridley Creek *
- Phragmites patch west of pump house along hedgerow
- Vines (oriental bittersweet, grape, foxgrape, etc.) Delchester Run mid-successional woodland, eastern section
- Old field/scrub woodland - throughout
- Monitor and keep free of invasives existing riparian restoration area along Ridley Creek east bank
- Implement Invasive Plant Management Timeline practices through a combination of utilizing Township Preserve subcontractors, and volunteers (research The Nature Conservancy's Weed Warriors program as model eed management program)
- Invasive removal and native planting in mid-successional woodland deer exclosure
- Conduct native tree planting in old field/scrub woodland, eventually shade out invasives

Watershed Improvement Priority Projects

- Dam Removal/Restore streambank (See Figure 4)
- Riparian buffer planting Ridley floodplain (See Figure 9, Priority 1)
- Riparian buffer planting Delchester Run (See figure 9, Priority 2)
- Riparian buffer planting along eastern section of Delchester Run

RECREATIONAL IMPROVEMENT PROJECTS

- Picnic table areas
- Dog on leash and off leash signage
- Trail maps identifying dog off leash area for public pick up at kiosks
- Put map on web

Appendix 5 OMP Okehocking Preserve Monitoring Management Task Sheet 2006-2010 Page1

General Monitoring	Target Area	Frequency	Notes
Natural Resources **Ridley Creek and Delchester Run**	Water Quality	Consult with Chester County Conservation District, Chester-Ridley-Crum Watersheds Association; Stroud Water Research Center; and others regarding monitoring program	
	Streambank Stability/Erosion	Check monthly and additionally after large precipitation events and/or flooding to identify any areas that need restoration.	
Woodland Health	Exotic Insects	Coordinate with volunteers and learn to identify the Asian Longhorned Beetle, Sudden Oak Death, and the Emerald Ash Borer and notify DCNR immediately of any potential sightings	
General Plant Community Health	New Invasive Vegetation	Be cognizant of species listed on the Invasive Check List. Report any new sightings to DCNR, and update Invasive Management Timeline	
	Spread of current Invasives	Refer to Invasive Plant Management Timeline for emergent and flowering times to identify spread.	
		Create map of existing hot spots with invasives identified	
Restoration Areas	Forest Edge	Monitor forest edge restoration areas weekly to ensure new plantings are healthy. If deer are eating the new plants, repair or enhance deer deterrents. Check for rodent girdling at the stem base also and add any deterrents necessary. All new plants should be watered periodically to maintain plant health and ensure root survival.	
		Willistown Conservation Trust to monitor the forest edge and woodland interior on their property.	
	Riparian Areas	Same as forest edge monitoring, as well as monitor erosion - the repair or addition of any deterrents may carry over as a maintenance task.	
Wildlife	Volunteers	Research The Nature Conservancy's Weed Warrior volunteer program as potential model for Okehocking volunteer program	
	Population Surveys	Coordinate with outside groups that perform population surveys and sightings on birds, foxes, and deer, among others	

Okehocking Preserve Monitoring Management Task Sheet 2006-2010 page2

General Monitoring	Target Area	Frequency	Notes
Spray Irrigation System	Visual Check	Yerkes Engineering (610-525-6200) is responsible for monitoring and maintenance, including water quality testing.	
Historical Resources	Garrett House	Monitor buildings for any structural and external damage, perform checks monthly.	
	Garrett Barn	Slated for demolition.	
	WCT Barn	Willistown Conservation Trust to monitor this building and maintain it appropriately.	
Recreational Resources	Trail System	Monitor bi-monthly, look for erosion and over-use	
General Property	Fences	Monitor bi-monthly the fences that extend around the spray irrigation field and identify any need for repair	
	Parking Facilities and Roads	Monitor the condition of parking and road surfaces within the Preserve for erosion, potholes, etc. and schedule any maintenance necessary	
	Signs	Monitor any signage that needs to be replaced; keep information within the kiosks at the Route 3 and Delchester Road entrances current and useful	
	Trash	Monitor for any need to have more frequent pick ups or provide more cans.	
	Pet Waste	Monitor for any need to provide pet waste bag disposal system	
	Visitor Impact	Monitor for any need to make adjustments to park facilities for visitor use or for the need to restrict use in any are	

Appendix 5 OMP **OKEHOCKING PRESERVE MAINTENANCE TASK SHEET 2006 -2010**

NOTE: Most maintenance duties will result from the outcome of monitoring activities.

Maintenance Area	Repair Required	Notes
Trail System	Mow grass between 3 and 6 inches	
	Reseed any worn areas	
	Cut back plant encroachment	
	Monitor for erosion and correct	
Meadow Mowing	Follow mowing schedule outlined in Management Plan	
	Manage for invasives species, long term goal one cut per year	
Invasive Species	Refer to Invasive Plant Management Timeline and Invasive Species Checklist in this document for maintenance techniques and timing on targeted invasives at Okehocking	
	Refer to Priority Improvement Projects list for high priority management initiatives	
	Actively cut large vines and pull any new growth in areas where removal efforts and restoration plantings exist	
Parking Facilities and Access Roads	Repair and/or sub-contract any potholes, cracks, etc. so the areas remain in good condition	
	Repair any internal and external damage and sub-contract any tasks when necessary	
Spray Irrigation System	Yerkes Engineering to make system repairs as needed (610) 525-6200	
Restoration Planting Deer Deterrents	Repair any damage to deer deterrents discovered through weekly monitoring	

Appendix 5 OMP **OKEHOCKINGPRESERVEINVASIVESPECIESCHECKLIST**

The Pennsylvania Department of Conservation and Natural Resources keeps records of the range of all invasive plants and insects. If any of the insects or plants on the list of invasive that are not yet found in Okehocking are seen, please notify DCNR.

Contact: The Burearu of Forestry
Division of Forest Pest Management
(717)948-3941

Invasive Species Currently within Okehocking	Invasive Species to Keep a Careful Watch For
Amur Honeysuckle	Emerald Ash Borer
Japanese Honeysuckle	Asian Longhorned Beetle
Canada Thistle	Japanese Hops
Japanese Stiltgrass	Shattercane
Russian Olive	Bull Thistle
Autumn Olive	Jimson Weed
Oriental Bittersweet	Garlic Mustard
Mile-A-Minute Vine	Sudden Oak Death
Tree of Heaven	Kudzu Vine
Multiflora Rose	Japanese Knotweed
Norway Maple	Goats Rue
Purple Loosestrife	Johnson Grass
Common Reed or Phragmites	Giant Hogweed
	Foxgrape

NOTE: Refer to Appendix 5, Invasive Plant Management Timeline for specifics on managing invasive plant species.

Additional Information of the Emerald Ash Borer, Sudden Oak Death, and Asian Longhorned Beetle can be found at :

http://www.dcnr.state.pa.us/forestry/fpm_invasives.aspx

Additional Information about invasive vegetation can be found at:

1. The PA Department of Conservation and Natural Resources:
http://www.dcnr.state.pa.us/forestry/wildplant/invasive.aspx
http://www.nps.gov/plants/alien/index.htm
This link is to a National Park Service website that has outstanding lists, ranges, pictures, and control methods for invasive plants
2. The Nature Conservancy's Wildlands Invasive Species Program Element Stewardship Abstracts http://tncweeds.ucdavis.edu/esadocs
3. Colorado Natural Areas Program, Colorado Department of Natural Resources: Creating an Integrated Weed Management Plan: A Handbook for Owners and Managers of Lands with Natural Values: http://parks.state.co.us/cnap/IWM_handbook/IWM_index.htm
4. United States Geologic Service: http://www.usgs.gov/ - go to the Library Homepage
5. Penn State University Weed Management Abstracts: http://weeds.cas.psu.edu/

ACTION: Invasives should be mapped and monitored to assess success of removal and/or species propagation. Additional Township mapping capability should be considered.

Appendix 5 OMP

OKEHOCKING PRESERVE - INVASIVE PLANT MANAGEMENT TIMELINE

For Key, see page 3

	WINTER		SPRING			SUMMER			FALL			WINTER
	January	February	March	April	May	June	July	August	September	October	November	December
Trees												
Norway Maple			E----------FL----------FR----------									
Acer platanoides					Chemical: (1,2)----------							
			Manual:(A,D,E)----------									
Tree of Heaven				E----------FL----------FR----------								
Ailanthus altissima							Chemical: (1,2,3----------					
			Manual:(A,D,E)----------									
Shrubs												
Autumn Olive				E----------		FL----------		FR----------				
Eleagnus umbellata							Chemical:(1,3)----------					
	Manual:(A,D)----------											
Bush Honeysuckle			E----------		FL----------					FR----------		
Lonicera sp.						Chemical:(1,3,4)----------						
	Manual:(A,D)----------											
Multiflora Rose			E----------		FL----------			FR----------				
Rosa multiflora				Chemical: (1,3)----------			Chemical: (1,3,4)----------					
	Manual:(A,D)----------											
Vines												
Oriental Bittersweet			E ----------		FL----------					FR----------		
Celastrus orbiculatus				Chemical:(1,3)----------		Chemical: (1, 3, 4)----------						
				Manual: (A, B, D, F)------		Manual: (A, B, C)----------		Manual: (A, B, C, F)----------				
Mile-A-Minute		E ----------			FL----------			FR----------				
Polygonum perfoliatum				Chemical: (1, 3, 4)----------								
			Manual:(A,D)----------									
Herbaceous												
Canada Thistle		E ----------			FL----------				FR----------			
Cirsium arvense		Chemical: (3,4)----------										
					Manual:(A)---Manual(C,D,F)----------							
Purple Loosestrife					E----------		FL----------			FR----------		
Lythrum salicaria							Chemical: (3, 4)----------					
	Manual:(A)----------				Manual(A,C,D)----------			Manual(A)----------				

Invasive Plant Timeline from Delaware RiverKeeper Network - Washington Crossing , PA 18977 (215) 369-1188

Continued on next page

OKEHOCKING PRESERVE - INVASIVE PLANT MANAGEMENT TIMELINE

	WINTER		SPRING			SUMMER			FALL			WINTER
	January	February	March	April	May	June	July	August	September	October	November	December
Herbaceous cont'd												
Japanese Stilt Grass					E----------			FL----------		FR-----		
Microstegium vimineum					Chemical:(3,4,5)----------							
			Manual: (G)-Manual: (A, B, F)----------				Manual: (B, C, F)----------		Manual: (C)----------			
Common Reed				E----------		FL----------		FR----------				
Phragmites australis							Chemical: (1, 3, 4)----------					
					Manual: (A, B)----------			Manual: (B, C)xx				

Invasive Plant Timeline from Delaware RiverKeeper Network - Washington Crossing , PA 18977 (215) 369-1188

For Key see page 3

Appendix 5 OMP **OKEHOCKING PRESERVE INVASIVE PLANT MANAGEMENT TIMELINE - KEY AND INSTRUCTIONS**

BEFORE USING THE INFORMATION INCLUDED IN THIS MANAGEMENT TIMELINE:

1. Double check control guidelines and time of application as listed in appropriate fact sheets for each plant, management guides, or other scientifically based literature (see websites of the Virginia Native Plant Society, Plant Conservation Alliance, The Nature Conservancy, and the Morris Arboretum of the University of Pennsylvania for free invasive plant fact sheets).
2. Make sure that the specifics of each control application are understood (e.g., cutting heights, chemical concentrations, timing, etc.)

KEY

E = Emergence	Perennials first emerge through soil, seedlings sprout, and woody plants leaf out.
FL=Flowering	When the plant typically flowers, many invasive species have early and/or extended blooming times. Most invasives are easier to identify when in flower.
FR = Fruiting	When the plant typically produces fruit or seed. Plants with extended fruiting times indicate prolific seed producers or fruit persistent through winter.
MANUAL	**Manual & Mechanical Methods** *(Methods including cultural controls like planting and prescribed burns are alternatives to consider.)* (A) PULL seedlings, small shrubs, and vines with shallow roots when the soil is moist. Dig out larger root systems. Use a spading fork or weed wrench for small trees and shrubs. Minimize or heal soil disturbar native cover when possible. (B) MOW OR CUT BACK at least 3 times per growing season to deplete the underground stores of food. Time cutting to reduce seed formation and remove cuttings of flower heads when necessary. Repeat yea necessary, for control or use in combination with chemical methods for eradication. *Note: Mowing can assist in spreading seed of some invasive species if conducted at the wrong time of year. See individual fact s for species-specific information.* (C) DEADHEAD flowers by carefully cutting and removing flowers or cut off seed heads before they ripen. For small populations or sensitive areas. Bag cuttings and dispose of properly. (D) CUT ABOVE GROUND PORTION of all stems or trunks. The stems should be cut slightly below the ground surface. This includes repeated cutting of sprouts and using techniques like stabbing to sever the (E) GIRDLE TREE by cutting through the bark and the cambium all the way around the trunk, about 6 inches from the ground. Girdling is most effective in the spring when the sap is rising or in the fall when the tr to send food down to the roots. Repeated cutting of sprouts may be needed. (F) MULCHING/SOLARIZATION are most often considered temporary control methods until a more rigorous form of control can be applied. (G) TILLING is fairly drastic method of control that is appropriate for large infestations where mechanized equipment can be used.
CHEMICAL	**Chemical Control Methods** *(These methods should ONLY be used by trained and authorized individuals)* 1 CUT AND PAINT stem or stump with glyphosate. Use caution in cutting down large trees. Cut and paint re-sprouts. Use caution in applying this method to vines with rootlets, which can transport herbicide to tree or other plant. 2 GIRDLING or DRILL and SQUIRT. This method is for 3-inch or larger trunks, penetrate into growing layer and squirt only enough glyphosate to fill the hole. 3 PAINT FOLIAGE with glyphosate using an envelope dauber or "bloody" glove method, taking care not to drip on desired plants. 4 FOLIAR SPRAY of glyphosate is appropriate for limited situations such as monoculture infestations that are not near sensitive habitats. 5 PRE-EMERGENT herbicides are appropriate for limited situations such as controlling large seed banks that are not near sensitive habitats.

Invasive Plant Timeline from Delaware RiverKeeper Network - Washington Crossing , PA 18977 (215) 369-1188

Updated information and management methods for invasive weeds can be found at:

1. Colorado Natural Areas Program, Colorado Department of Natural Resources: *Creating an Integrated Weed Management Plan: A Handbook for Owners and Managers of Lands with Natural Values: http://parks.state.co.us/cnap/IWM_handbook/IWM_index.htm*
2. The Department of Conservation and Natural Resources Abstracts: http://www.dcnr.state.pa.us/forestry/wildplant/invasive.aspx
3. National Park Service Abstracts: http://www.nps.gov/plants/alien/index.htm.
4. The Nature Conservancy Wildlands Invasive Species Program Abstracts: http://tncweeds.ucdavis.edu/esadocs (See Appendix 3 for sample).
5. Appendix 5 in this document: Invasive Plant Management Timeline from Delaware RiverKeeper Network (215-369-1188), and the Invasive Species Checklist.
6. United States Geologic Service: http://www.usgs.gov/ - go to the Library Homepage
7. Penn State University Weed Management Abstracts: http://weeds.cas.psu.edu/

OKEHOCKING PRESERVE MANAGEMENT PLAN

APPENDIX 6

Deer Management Report—
Delchester Conservation Group

The Delchester Conservation Group
Preservation-Management-Conservation
334 West Front Street
Media, Pennsylvania 19063
www.delchester.org

August 20, 2005

WILLISTOWN CONSERVATION TRUST and WILLISTOWN TOWNSHIP
DEER MANAGEMENT REPORT FOR
OKEHOCKING PRESERVE, ASHBRIDGE PRESERVE, DOUBLE-DEE FARM

Enclosed is the report of the 2004-2005 deer management project. The information contained herein is derived from an extensive amount of field surveys and biological assessments obtained from harvested deer. The structure of this report is based on the "Quality Deer Management Association's Uniform Reporting System." This system allows for an accurate and thorough accounting of a property's deer population.

Beginning in September 2004, Delchester Conservation Group (DCCG) conducted weekly population assessments of the deer herd residing on Okehocking Preserve, Ashbridge Preserve and Double-Dee Farm. The tract of land known as Okehocking Preserve is now owned or managed by the Willistown Conservation Trust and Willistown Township. Ashbridge Preserve is owned and managed by Willistown Conservation Trust. Double-Dee Farm is owned by a private landowner and a joint-participant in this project. The surveys were conducted at night, using spotlights and night-vision equipment. Observations of deer were recorded and resulted in estimates of the deer population's size, sex distribution and age structure. This information was then used to formulate a management plan. Based on the data obtained from these surveys, DCCG made the following estimates:

Ashbridge Preserve : the preserve's deer population was estimated at or about 29 deer, with a sex ratio of 3:1(females to males).

Okehocking Preserve and Double Dee Farm: Given that both properties are adjacent to one another, DCCG conducted its estimates for both jointly. The deer population was estimated at or about 132 deer, with a sex ratio of 7:1(females to males).

Pre-Season Recommendation:

The management recommendations of DCCG indicated that antlerless deer, specifically females between the ages of 18 months and older, should be aggressively removed from the population. Harvesting female deer has the effect of equalizing the sex ratio in an overpopulated deer herd. The harvesting of mature antlered male deer would be severely reduced. Only mature males over 2.5 years old would be harvested, any males under that threshold age class would be protected.

Reasons for Management Recommendation:

The reduction of the female deer population causes increased competition among male deer, thereby having dominant males doing most of the breeding. The long-term effects of this management decision should result in a shorter breeding season, a smaller deer herd, a balanced sex ratio and improved habitat.

Post-Season Report:

Ashbridge Preserve:

The results of the 2003-2004 program resulted in 15 antlerless deer being harvested. This amount was comprised of 9 females under 18 months old, 2 of those deer were under the age of 6 months of age. There were 6 females over 18 months old harvested. The last group is comprised of predominantly breeding age animals, ranging in age from 2.5 years to 5 years old. The age was determined by analyzing the jawbone and teeth of each animal. There was only 1 male deer taken from the property. This animal was a 3.5 year old male. The total "net" harvest was comprised of 16 deer.

The average weight of deer was determined by using specially developed "bio-tapes" supplied by the Pennsylvania Game Commission. They indicate the average live weight based on the circumference measurement of the animal's chest. The following are the average live weight measurements of deer harvested.

Average Body Weight
Male
Average live weight 179 lbs.
Females
Deer less than 12 months
Average live weight 47.2 lbs.
Deer 18 months or older
Average live weight 137 lbs.

Of the animals harvested, none showed any incidence of disease or injury. All appeared to be healthy and in prime condition. Those females of breeding age showed signs of lactation, evidencing that they had fawns the previous spring.

Conclusion:

Although the DCCG program has further reduced the size of the Ashbridge Preserve deer population, it is still above the Pennsylvania Game Commission

recommended level of 21 deer per square forested mile. DCCG is of the opinion that the current management program has been effective in obtaining this level and recommends that the program be continued. DCCG considers the deer population at Ashbridge at a manageable level, and should remain at that level with a maintained deer management plan.

DCCG would like to begin conducting surveys of the Ashbridge Preserve herd in August. After enough data is obtained, DCCG will forward its report and management recommendations.

Okehocking Preserve and Double Dee Farm: Given that both properties are adjacent to one another, DCCG conducted its estimates for both jointly. The deer population was estimated at or about 132 deer, with a sex ratio of 7:1(females to males).

Pre-Season Recommendation:

The management recommendations of DCCG indicated that antlerless deer, specifically females between the ages of 18 months and older, should be aggressively removed from the population. Harvesting female deer has the effect of equalizing the sex ratio in an overpopulated deer herd. The harvesting of mature antlered male deer would be severely reduced. Only mature males over 2.5 years old would be harvested, any males under that threshold age class would be protected.

Reasons for Management Recommendation:

The reduction of the female deer population causes increased competition among male deer, thereby having dominant males doing most of the breeding. The long-term effects

of this management decision should result in a shorter breeding season, a smaller deer herd, a balanced sex ratio and improved habitat.

Post-Season Report:

The results of the 2004-2005 program resulted in 68 antlerless deer being harvested. This amount was comprised of 32 females under 18 months old, 9 of those deer were under the age of 6 months of age. There were 36 females over 18 months old harvested. The last group is comprised of predominantly breeding age animals, ranging in age from 1.5 years to 5.5 years old. The age was determined by analyzing the jawbone and teeth of each animal. There was 3 male deer taken from the property. Male deer harvested range in age from 1.8 to 3 years old.. The total "net" harvest was comprised of 71 deer.

The average weight of deer was determined by using specially developed "bio-tapes" supplied by the Pennsylvania Game Commission. They indicate the average live weight based on the circumference measurement of the animal's chest. The following are the average live weight measurements of deer harvested.

Average Body Weight
Male
Average live weight 168 lbs.
Females
Deer less than 12 months
Average live weight 55.8 lbs.
Deer 18 months or older
Average live weight 135 lbs.

Of the animals harvested, several showed incidence of disease or injury. Two female deer were found to have amputated legs. DCCG has encountered this before and has

concluded that these injuries are a result of vehicle strikes. The two deer referenced otherwise appeared healthy and showed evidence of lactation, an indicator of raising fawns that year. 3 other deer, all under 6 months of age, showed evidence of suffering from hemorrhagic disease. This may have been caused by a massive tick infestation. These deer appeared very sickly and underweight. Otherwise, all other deer harvested appeared to be healthy and in prime condition. Those females of breeding age showed signs of lactation, evidencing that they had fawns the previous spring.

Conclusion:

Although the DCCG program has reduced the size of the Okehocking Preserve and Double -Dee Farm deer population, it is still above the Pennsylvania Game Commission recommended level of 21 deer per square forested mile. DCCG is of the opinion that the current management program will be effective in obtaining this level and recommends that the program be continued.

DCCG would like to begin conducting surveys of the Okehocking Preserve and Double Dee Farm herd in August. After enough data is obtained, DCCG will forward its report and management recommendations.

DELCHESTER CONSERVATION GROUP

BY: Michael A. Siddons

MICHAEL ALAN SIDDONS, SECRETARY

OKEHOCKING PRESERVE MANAGEMENT PLAN

APPENDIX 7

Okehocking Conservation Easement and Extension

THIS GRANT OF EASEMENT AND DECLARATION OF RESTRICTIVE COVENANTS, hereinafter referred to as the "Easement", made the day of , 2001.

BETWEEN WILLISTOWN TOWNSHIP, having an address of 688 Sugartown Road, Malvern, Pennsylvania 19355, party of the first part, hereinafter called "Grantor",

A N D

WILLISTOWN CONSERVATION TRUST, INC., a non-profit corporation of the Commonwealth of Pennsylvania, having an address of 7000 Goshen Road, Newtown Square, Pennsylvania, 19073, party of the second part, hereinafter called "Grantee",

W I T N E S S E T H

WHEREAS, Grantor is the owner of a certain tract of ground known as the Willistown Township Okehocking Preserve, located in Willistown Township, Chester County, Commonwealth of Pennsylvania, containing approximately 132.094 acres of land, Uniform Parcel Identifier Numbers 54-8-14, 54-8-14.1, 54-8-14.2 and a part of 54-8-14.2B, hereinafter called the “Conservation Easement Areas”. The Conservation Easement Areas are identified on a plan prepared for Willistown Township by Chester Valley Engineers dated July 5, 2001, revised July 30, 2001 and attached hereto and made a part hereof as Exhibit “A”. The Conservation Easement Areas are further described by legal description and attached hereto and made a part hereof as Exhibit “B”; and

WHEREAS, the Conservation Easement Areas possess natural, scenic, historic, recreational, open space, and water resource values worthy of conservation protection, and of great importance to the Grantor and the community, hereinafter the "Conservation Purposes"; and

WHEREAS, the specific Conservation Purposes of the Conservation Easement Areas are documented in a natural resources inventory on file at the office of Grantee, dated July 12, 2001 and incorporated by this reference ("Baseline Documentation") which consists of reports, maps, photographs, and other documentation intended to provide Grantor and Grantee with an accurate representation of the Conservation Easement Areas at the time of this Easement and which will serve as an objective information baseline for monitoring compliance with the terms of this Easement; and

WHEREAS, the Conservation Easement Areas are situated within the Piedmont region and contain relatively natural ecosystems in a substantially undisturbed state, harboring a diversity of plants and animals in a broad range of habitats, including mature woodlands, open grasslands, palustrine and emergent wetlands, ponds, and streams; and

WHEREAS, the Conservation Easement Areas include steep slopes, woodland, high water table soils, wetland, pastureland, grassland, open space, prime agricultural soils, and

WHEREAS, the Conservation Easement Areas contain a significant population of the plant *Rotala ramosior*, or “toothcup”, listed as rare by the State of Pennsylvania, and Grantor intends by this easement to protect and preserve this plant and the integrity of its habitat within the Conservation Easement Areas; and

WHEREAS, the Conservation Easement Areas contain a number of vernal pools along the floodplain of the Ridley Creek and these pools provide important habitat for wildlife, including herpetile species; and

WHEREAS, the Conservation Easement Areas are located in the Ridley Creek Watershed and future development in the Ridley Creek Watershed threatens to diminish the quality and quantity of water in this area according to the Chester County Water Resources Authority and the Chester County Planning Commission's 1978 Water Resource Inventory Study (the "Study"); and

WHEREAS, the Study presents limiting population density as a viable means to minimize stream quality degradation and to maintain water supply reserves within the Ridley Creek Watershed; and

WHEREAS, Ridley Creek is afforded High Water Quality Protection by the Commonwealth of Pennsylvania and is officially designated as a High Quality Trout Stocking Fishery, which runs into the Delaware River Basin and is an important source of the Philadelphia area water supply; and

WHEREAS, the Conservation Easement Areas include a small tributary and the main stem of the Ridley Creek, seasonal high water table soils, steep slopes 25 percent and greater, prime agricultural soils (Classes 1 and 2), a significant woodland and wetlands which abut Ridley Creek; and

WHEREAS, Ridley Creek would be highly susceptible to erosion damage and an increase in stormwater runoff which could adversely affect its water quality and flood patterns if the trees or other vegetation were improvidently removed; and

WHEREAS, the Conservation Easement Areas contain an early Nineteenth Century farmhouse and barn representative of the English Quaker settlers; and

WHEREAS, the Conservation Easement Areas consist of land that was part of the Okehocking Indian Land Grant from William Penn to the Unami tribe in 1701, and has been registered with United States Department of the Interior as a Historic District; and

WHEREAS, the Conservation Easement Areas are located in an area designated for “Rural Development” and “Preservation of Background Open Space” in the Chester County Open Space and Recreation Study prepared by the Chester County Planning Commission and the Chester County Parks and Recreation Department in June, 1982; and

WHEREAS, the entirety of the Conservation Easement Areas shall be placed under conservation easement agreement with Grantee and protection of these Conservation Easement Areas will enhance the purpose of preserving and protecting open space, water resources, sensitive natural areas and historic structures; and

WHEREAS, The Willistown Township Comprehensive Plan entitled "Guidelines for Growth" adopted on March 25, 1980, establishes as the Township's first major goal the preservation of the quality of those aspects of Willistown's environment which enhance the rural character of the Township, are limited or irreplaceable, or are ecologically sensitive; and

WHEREAS, on March 24, 1997, by Resolution No. 8, Willistown Township adopted a revised updated “Guidelines for Growth” reinforcing the conservation goals of the community as established by the 1981 Comprehensive Plan and as part of the “protection of community values”; and

WHEREAS, the Resolution includes as part of the community objective for preserving environmentally sensitive lands and natural resources policies which emphasize protecting those natural and manmade environmental features which either enhance the rural character, are limited and irreplaceable or which are ecologically sensitive;

WHEREAS, the Board of Supervisors of Willistown Township adopted on June 9, 1981, Resolution No. 7 ("Resolution"), a formal declaration of policy that strongly encourages local conservation groups and landowners and citizenry within the Township to utilize conservation easements to help implement the open space planning goals of the Township and to aid in preserving the natural resources, agricultural lands, open space, and scenic and rural character of the community; and

WHEREAS, the Resolution reiterated recommendations contained in the Willistown Township Comprehensive Plan that the Township implement its land conservation objectives by the easement of steeply sloping lands, stream corridors, areas where there is a shallow depth to the seasonally -high water table, flood-prone areas, woodlands and specimen trees, and historically or culturally significant landmarks; and

WHEREAS, the Conservation Easement Areas are in close proximity to other lands under conservation easement agreement and preservation of the Conservation Easement Areas will enlarge an area of protected open space; and

WHEREAS, the Chester County Open Space and Recreation Study adopted by the Chester County Planning Commission and the Chester County Parks and Recreation Department in June, 1982 encourages stream valley preservation and the use of conservation easements as a means of protection; and

WHEREAS, in March, 1993, Willistown Township adopted an Open Space, Recreation and Environmental Resources Plan which identifies and documents significant cultural, historic, scenic and natural resources with the express purpose of protecting these resources. This Plan includes Water Resources, Land Resources, Geology, Biotic Resources, Land Use, Protected Lands, Scenic and Historical Resources, Scenic Roads; and

WHEREAS, the Plan identifies several natural features on the Conservation Easement Areas in the aforementioned Open Space, Recreation and Environmental Resource Plan; and

WHEREAS, in November, 1999, Willistown Township passed an Open Space Referendum with 78% voter approval enabling the Township to purchase critical lands for open space and recreation; and

WHEREAS, the Township and Grantee have joined together to leverage such funds by obtaining matching grants from Chester County and the Pennsylvania Department of Conservation and Natural Resources to effect the purchase of the Conservation Easement Areas; and

WHEREAS, the Conservation Easement Areas contain greater than 1900 feet of road frontage on PA Route 3, 900 feet of road frontage on Delchester Road, and 1400 feet of road frontage on Garrett Mill Road and the public travelling along these roads can enjoy scenic views of the Conservation Easement Areas whose beauty and open character shall be preserved and protected by this Easement and which views include an historic house and barn; and

WHEREAS, the Easement provides for public access for specified recreational activities and to assist in the education of the public on the environmental and visual aspects of the Conservation Easement Areas; and

WHEREAS, Grantor and Grantee desire to preserve the educational, recreational, historic, natural, open space, agricultural, scenic and water resources of the Conservation Easement Areas and further desire to conserve and protect the Conservation Easement Areas from soil erosion, water pollution, and other human-induced disturbance of this watershed and its resources; and

WHEREAS, Grantee is a publicly-supported, tax exempt non-profit organization, qualified under Section 501(c)3 and 170(h) of the Internal Revenue Code, whose primary purpose is the identification and preservation of natural, historic, and scenic resources, with particular emphasis on the protection and preservation of water resources; and

WHEREAS, Grantee agrees by accepting this Easement to honor the intentions of Grantor stated herein and to preserve and protect in perpetuity the Conservation Values of the Conservation Easement Areas from soil erosion, water pollution, and other human-induced disturbance for the benefit of this generation and generations to come.

NOW THEREFORE, for and in consideration of the mutual promises herein contained and for the further consideration of the sum of Five Dollars ($5.00), lawful money of the United States of America, in hand paid by Grantee to Grantor, the receipt and sufficiency of which is hereby acknowledged, the parties hereto intending to be legally bound do hereby mutually agree, grant, convey, and declare as follows:

1. STATEMENT OF GRANT

Grantor hereby unconditionally and absolutely grants and conveys unto Grantee, its successors and assigns, in perpetuity, an Easement in Gross and a Declaration of Restrictive Covenants with respect to the Conservation Easement Areas, as more particularly hereinafter set forth exclusively for the purposes of preserving and protecting the present scenic, historic, recreational, educational, natural, agricultural, open space, and water resource values of the Conservation Easement Areas (the "Conservation Purposes"). Grantee hereby accepts the Easement and agrees to hold it exclusively for such Conservation Purposes, subject to the provisions set forth herein.

2. ACCESS

In furtherance of the Conservation Purposes of this Easement set forth in Paragraph 1 above, Grantor hereby declares and covenants that the public shall have and be allowed access to the Conservation Easement Areas subject to the limitations contained in this Easement.

3. PERMITTED RECREATION AND OPEN SPACE ACTIVITIES

In order to accomplish, safeguard, and promote the purposes of the Easement set forth in Paragraph 1 above, Grantor and Grantee hereby declare and covenant that activities are permitted on the Conservation Easement Areas only as described in sub-paragraphs A through C of this Paragraph 3 and subject to the limitations contained in this Easement.

A. Definitions. For purposes of this Easement the following definitions shall apply:

i. Passive Recreation: Those recreational and open space activities which can be carried out with little or no alteration or disruption to the natural features of the land on which they take place. Examples of such activities include walking, jogging, picnicking, bird watching, horseback riding and nature study.

ii. Low Impact Active Recreation: Those recreational and open space activities which can be carried out with minimal impact or disruption to the natural features of the land on which they take place but include certain more active uses than Passive Recreation defined above. Examples of such more active uses include informal games (those not requiring permanent or fixed structures), ice skating, camping, and community horticultural or agricultural activities.

iii. Active Recreation: Those recreational and open space activities which require physical alteration to the land on which they take place. Examples of such alteration would include the construction of playgrounds and ball fields, tennis and basketball courts and paved walking trails, spectator stands, goalposts, restrooms and refreshment structures, paving and earthmoving associated with the foregoing uses and with community agricultural or horticultural activities

(iv) Passive and Active Recreation Consistent with Historic Integrity: Those Passive and Active Recreation and open space activities which are managed with particular attention to preserving the integrity of the historic landscape and structures of the Conservation Easement Area.

B. Activities serving to preserve, restore, enhance or maintain habitat areas for native flora and fauna are permitted on all Conservation Easement Areas.

Additional Permitted Activities on the Conservation Easement Areas
Conservation Easement Area A: Passive and Active Recreation.
Conservation Easement Area B: Passive Recreation.
Conservation Easement Area C: Passive and Low Impact Active Recreation.
Conservation Easement Area D: Passive Recreation, Active

Recreation Consistent with Historic Integrity, commercial u se so long as such use is not detrimental to the Conservation Purposes of this Easement and the historic integrity of Conservation Easement Area D, and residential.

4. PERMITTED IMPROVEMENTS

No building, structure, improvement, or facility (hereinafter referred to as an "Improvement") shall be constructed, repaired, remodeled, reconstructed, or maintained on the Conservation Easement Areas except as permitted within this Paragraph 4.

Grantor and Grantee hereby declare and covenant that Improvements are permitted within the Conservation Easement Areas only as indicated within this Paragraph 4, which Improvements are further subject to the limitations contained within this Easement:

A. Definitions. The following definitions apply to Improvements permitted by this Easement:

(i) Attached Apartment. A single family attached dwelling unit located on the parcel of a Primary Residence and held in common ownership therewith. An Attached Apartment may only be attached to or be part of a Primary Residence, Accessory Structure or Agricultural Structure permitted herein. An Attached Apartment shall not exceed 50% of the Gross Floor Area of the Improvement of which it is a part or One Thousand (1000) square feet of Gross Floor Area, whichever is less;

(ii) Gross Floor Area. The area of the several floors within the perimeter of the outside walls of the Improvement, without deduction for hallways, stairs, closets, thickness of walls, columns, or other features, excluding garages which are not used for human habitation;

(iii) Primary Residence. A single family detached dwelling unit constituting the primary residential use of the parcel on which it is located. A Primary Residence shall not exceed three thousand (3000) square feet of Gross Floor Area or thirty-five (35) feet in Height;

(iv) Secondary Residence. A single family detached dwelling unit located on the parcel of a Primary Residence and held in common ownership therewith. A Secondary Residence shall not exceed two thousand (2000) square feet of Gross Floor Area or thirty-five (35) feet in Height;

(v) Utility Facilities. Services and facilities normally used in connection with supplying electric, phone, water, controlling stormwater runoff, and removing and treating sanitary sewage effluent.

B. Existing Improvements: Activities are permitted to repair, remodel, reconstruct, remove (with the exception of the historic Primary Residence and Barn on Conservation Easement Area D), replace, expand, make additions to and maintain the Improvements now existing on the Conservation Easement Areas, and identified on Exhibit "A" as the following:

On Conservation Easement Area A:

(i) No Improvements.

On Conservation Easement Area B:

i. One (1) Dam;
ii. One (1) Access Drive.

On Conservation Easement Area C:

i. Two (2) Ponds;
ii. One (1) Pumphouse;
iii. One (1) Spray Irrigation Field;
iv. Access Drives.

On Conservation Easement Area D:

(i) One (1) Primary Residence;
(ii) One (1) Barn;
iii. One (1) Access Drive.

C. Permitted Additional Improvements. There shall be a right to construct, repair, remodel, reconstruct, remove, replace, expand, construct additions to, and maintain on the Conservation Easement Areas, in addition to the existing Improvements identified in Paragraph 4B above:

On Conservation Easement Area A:

i. Access Drives;
(ii) Parking Areas;
(iii) Recreational Improvements consistent and associated with Active Recreation as defined in Paragraph 3A above;
iv. Fences. Such fences shall be set back a minimum of thirty (30) feet from the edge of any public road;
v. Utility Facilities; and
vi. Structures associated with Conservation Easement Area storage and maintenance.

On Conservation Easement Area B:

(i) Recreational Improvements consistent and associated with Passive Recreation as defined in Paragraph 3A above;
ii. Pond(s), subject to the limitations set forth in Paragraph 6H herein;
(iii) Fences; and
(iv) Utility Facilities to serve the existing barn leased or owned by Grantee as shown on Exhibit "A".

On Conservation Easement Area C:
Access Drives;
Parking Areas;
Recreational Improvements consistent and associated with Low Impact Recreation as defined in Paragraph 3A above. Such improvements may include recreational fields and the physical alterations to the land, including grading, but not permanent structures or lighting fixtures. Such recreational fields shall be located in an area determined to have the least impact upon the natural, scenic, historic, open space and water resource value of the Conservation Easement Areas.
Pond(s), subject to the limitations set forth in Paragraph 6H herein;

i. Fences. Such fences shall be set back a minimum of thirty (30)

feet from the edge of any public road;

ii. Utility Facilities; and

iii. Structures associated with the existing Spray Irrigation Field and future Wastewater Absorption Areas and Conservation Easement Area storage and maintenance;

iv. Wastewater Absorption Areas;

ix. Rest Rooms.

On Conservation Easement Area D:

i. One (1) Secondary Residence related to Conservation Easement Area uses, and shall be located in Acceptable Residential Location as shown on Exhibit "A";

(ii) One (1) Attached Apartment related to Conservation Easement Area uses;

(iii) Access Drives;

(iv) Parking Areas;

(v) Recreational Improvements consistent and associated with Active Recreation Consistent with Historic Integrity as defined in Paragraph 3A;

(vi) Pond(s), subject to the limitations set forth in Paragraph 6H herein;

(vii) Fences;

(viii) Utility Facilities;

v. Structures associated with Conservation Easement Area storage and maintenance; and

vi. Structures associated with commercial use as defined in Paragraph 3C(iv) above.

D. Architectural Design and Materials. Where applicable and feasible, all Improvements constructed on the Conservation Easement Areas shall be of a design compatible with traditional Chester County eighteenth or nineteenth century rural architecture. The height of any dwelling structure shall not exceed thirty-five (35) feet when measured from grade level to the highest point of the roof, exclusive of chimneys or other appurtenances. The materials to be used on the exterior of any dwelling shall be of fieldstone, wood, old brick, or stucco over stone, and the roofing materials shall be of cedar shingle or standing seam metal. Other materials may be used with the prior written approval of Grantee.

Grantor's purpose in extending to Grantee the right and duty under this Paragraph 4D to monitor architectural design and materials used is to protect the Conservation Purposes and scenic value of this Easement.

E. Access Drive Width and Parking Area Materials. The width of any Access Drive to be constructed on the Conservation Easement Areas shall not be in excess of the minimum width required by applicable governmental regulation. Any Access Drive or Parking Area shall be constructed of permeable materials unless otherwise approved by the Willistown Township Board of Supervisors or by Grantee.

F. Lighting Restrictions.

i. There shall be no upward lighting on the exterior facade of any structure;

ii. Any lighting shall be designed to minimize the negative impact upon scenic views from public roads.

G. Casualty Loss. In the event of damage to an existing Improvement resulting from casualty loss to an extent rendering repair of such Improvement impractical, erection of a replacement Improvement shall be permitted subject to the terms and conditions of this Easement and the review and approval of Grantee, as described in Paragraphs 4, 5 and 9 herein.

H. Habitable Improvements. No Improvements, with the exception of the Primary Residences, Secondary Residence, and the Attached Apartment permitted under the terms of this Easement, may be used for permanent or temporary habitation by humans.

I. Ecological Improvements. Improvements serving to preserve, restore, enhance, or maintain habitat areas for native flora and fauna are permitted on all Conservation Easement Areas.

5. REQUIREMENTS FOR GRANTEE APPROVAL OF IMPROVEMENTS

A. A plan describing the use, location, size, height, and Gross Floor Area, where applicable, of any proposed Improvement permitted under Paragraph 4, with the exception of fences and minor repairs which do not affect the location, size, height or Gross Floor Area of the Improvement, must be submitted to Grantee for review and comment prior to the construction of such Improvement on the Conservation Easement Areas. The plan shall include the location and a written narrative of all stormwater management facilities and erosion control methods, elevation contours and proposed changes in grade, and existing vegetation and proposed vegetation removal, where applicable.

B. The use and location of such Improvements shall be consistent with the Conservation Purposes intended herein, and shall not be located within environmentally sensitive areas, including but not limited to the “Sensitive Riparian Area” as shown on Exhibit “A”, slopes exceeding twenty-five percent (25%) in grade, or high water table soils or in areas highly visible from public roadways.

C. Improvements shall be constructed by methods which are attentive to minimizing disturbances to the environment, including but not limited to minimal removal of vegetation, minimal movement of earth, and minimal clearance of access routes for construction vehicles. Grantee may require Grantor to install stormwater management or waste treatment measures and erosion control measures where an Improvement or activity may impair the surface or groundwater quality.

D. Grantee may require Grantor to submit for review and written comment a landscape plan, which when implemented, will reduce the visual impact of any proposed Improvement permitted under Paragraph 4 herein, upon the scenic and historic character of the landscape from public roadway. Landscaping measures need not completely conceal the Improvement, but should serve to break up its visual mass during both summer and winter. A variety of native plant species shall be used

predominately.

6. GENERAL RESTRICTIONS ON USE

All permitted activities shall be operated in compliance with all of the following requirements:

A. Best Management Practices. In compliance with practices established by the Natural Resources Conservation Service (NRCS) and the Chester County Conservation District, or its successors, Best Management Practices for sedimentation and erosion control and nutrient management must be employed to minimize soil erosion, overgrazing, and other damaging occurrences;

B. Chemical and Biological Additives. Pesticides, herbicides, insecticides, fertilizers or other soil, flora or fauna additives shall:

(i) be used and disposed of in accordance with applicable laws;

(ii) not be applied to flora, fauna or the ground surface within three hundred (300) feet of streams, Sensitive Riparian Areas, ponds, or the habitat areas of uncommon, rare, threatened or endangered flora or fauna, except for the management of invasive species with prior approval by Grantee; and

(iii) not continue to be used in a manner which demonstrably causes deterioration of surface or ground water quality.

C. Disturbance of Soil. Plowing or tilling of soil shall not be conducted within one hundred (100) feet of a pond, stream or Sensitive Riparian Area.

D. Additional Control Measures. Grantee may require Grantor on a reasonable basis to install additional stormwater management, waste treatment, and/or erosion control measures where agricultural, farming, or livestock, or other practices have been established by Grantee as having the potential to impair surface or groundwater quality.

E. Signs. No signs, billboards, or outdoor advertising structures shall be placed, erected, or maintained on the Conservation Easement Areas other than a reasonable number of signs not to exceed twenty (20) square feet for the following purposes:

(i) To state the name of each Conservation Easement Area, or any portion thereof, and the names and addresses of any occupants;

ii. To advertise the sale or lease of the Conservation Easement Areas, or any portion thereof;

iii. To advertise an activity permitted under the provisions of this Easement;

iv. To post the Conservation Easement Areas against activities either prohibited or not specifically permitted under the provisions of this Easement;

v. To educate or direct users of the Conservation Easement Areas.

Provided, however, this sub-paragraph E shall not limit the right of Grantee with prior approval of Grantor, to display in the Conservation Easement Areas, at its discretion, such signs as it may customarily use to identify lands under conservation easement to Grantee and the terms of such easement.

F. Quarrying and Excavation. No quarrying, excavation, depositing, or removal of rocks, minerals, gravel, sand, topsoil, or other similar materials from the Conservation Easement Areas shall occur, except in connection with an activity or construction permitted by this Easement.

G. Groundwater Removal. No mining or removal of groundwater from the Conservation Easement Areas shall occur, except as may be required for recreational, agricultural, horticultural, and residential uses as permitted herein.

H. Streams, Ponds, Wetlands. No diking, draining, filling or alteration of springs, streams, Ponds, "Wetlands" or "Sensitive Riparian Areas" as identified on Exhibit "A" shall occur, except to maintain, dredge or remove existing or permitted manmade ponds, and to construct Ponds, as permitted in Paragraph 4 herein subject to the following requirements:

In order to preserve and protect wetland areas, surface water quality and wildlife habitats, a plan for any Pond must be submitted to Grantee for review and written approval prior to construction and show the following specifications which if met shall result in Grantee's written approval:

(i) The Ponds shall be designed to:

(a) Promote the discharge of cold, oxygenated water;

(b) Reduce solar heating of the water by minimizing surface area and increasing depth and by implementing landscaping measures to shade the pond surface; and

(c) Limit disturbance of environmentally sensitive areas, such as important wildlife habitat areas or areas containing uncommon, rare or endangered flora or fauna.

(ii) Alternative designs for Ponds may be approved by Grantee if they are shown to enhance habitat for native flora and fauna.

I. Dumping. No depositing, dumping, or abandoning of any solid wastes, junk, liquid wastes, or chemical substances on or in the ground of the Conservation Easement Areas shall occur, excepting;

(i) Sanitary sewage effluent from structures or Improvements permitted hereunder;

(ii) Biological and chemical substances used in agricultural and horticultural activities, so long as such substances are used in compliance with the requirements of Paragraph 6B herein; and

(iii) Sanitary sewage effluent from structures or Improvements not located on the Conservation Easement Areas and with prior written approval of Grantee.

J. Tree Cutting. To protect surface water quality, prevent soil erosion, promote natural woodland succession, and to provide for the protection of wildlife habitat and plant communities, the cutting or removal of trees and/or woodland understory vegetation from the areas identified as "Woodland" on Exhibit "A" shall be subject to the following conditions:

(i) No trees or Woodland understory vegetation shall be cut or removed from a Woodland except;

(a) nonnative invasive species, including but not limited to

Norway maple, multi-flora rose or oriental bittersweet,

(b) To cut and/or remove those trees which are diseased, dangerous, or endanger the health of other Woodland species;

(c) To clear and maintain an opening in the Woodland not to exceed six (6) feet in width for the construction and maintenance of a pervious walking or equestrian trail subject to the review and written comment of Grantee; and

(ii) Dead trees, branches, scrap tree material, scrap shrub material, and detritus from the Woodland shall be retained in the Woodland for use as wildlife shelters, dens, refuges, and sanctuaries, and to replenish nutrients and organic matter, unless such materials are dangerous, diseased or threaten the health of other Woodland species; and

(iii) Grantor shall endeavor to minimize the cutting or removal of trees and native understory vegetation from hedgerows, or small isolated copses, which act as visual screens, windbreaks, erosion control measures or wildlife habitat areas.

The restrictions contained within this Paragraph 6J shall not limit the right of Grantor, without prior notice, to cut and remove ornamental, landscape, or shade trees around existing or permitted Improvements, which are not within a Woodland.

7. SUBDIVISION OF CONSERVATION EASEMENT AREAS

A. Subdivision Approval. No subdivision of the Conservation Easement Areas shall occur without the prior review and approval of Grantee and provided that the total number of Primary Residences, as specified in Paragraph 4, shall not be exceeded. Any parcel(s) created in excess of the permitted number of Primary Residences shall not allow the construction of a residential Improvement, thereon. Approval of subdivision shall not be withheld provided the intent of this Easement, as set forth in Paragraph 1 and other paragraphs of this Easement, is not violated.

B. Conveyancing. Prior to the conveyance of any portion of the Conservation Easement Areas, Grantor shall allocate between the subdivided parcels, any reserved rights permitted under this Easement, such as building rights and impervious surface coverage. These rights shall be specified in the respective deeds for the subdivided parcels and such deeds shall also include notice of this Easement by referencing the deed book and page number in which this Easement is recorded.

8. LIMITATIONS OF USE OF CONSERVATION EASEMENT AREAS FOR PURPOSES OF BUILDING DENSITY REQUIREMENTS

No portion of the Conservation Easement Areas may be used to satisfy land area requirements for the calculation of building density under municipal zoning laws for any lands not subject to this Easement.

9. GRANTOR'S DUTY TO NOTIFY; GRANTEE'S APPROVAL

Grantor, prior to performing or permitting any activity under this Easement which requires prior comment or written approval of Grantee, hereby agrees to submit to Grantee, for review and approval, the required information in writing. Grantee agrees in such cases to review Grantor's proposal and to acknowledge, execute, and deliver to Grantor a written instrument granting approval or stating the reason for denial within sixty (60) days of receipt of written request and the required information from Grantor. In the event that Grantee fails to respond to Grantor's written request within sixty (60) days, approval shall be deemed granted on the sixtieth (60th) day after submission of the request. Following approval of the proposal, Grantor, his/her/their successors or assigns, shall have five (5) years from the date of approval to complete approved actions. If the previously approved action is not completed within five (5) years, Grantor must re-submit the request to Grantee for review and/or approval according to the procedures described herein.

10. NOTICE

All notices, consents, approvals, or other communication hereunder shall be in writing and shall be deemed properly given if sent by U.S. certified mail, return receipt requested, addressed to the appropriate party or successor in interest, at the address most recently provided.

11. ENFORCEMENT RIGHTS OF GRANTEE

A. To accomplish the Conservation Purposes of this Easement, the following rights are conveyed to Grantee by this Easement:

(i) To preserve and protect the Conservation Purposes of the Conservation Easement Areas;

(ii) To enter upon the Conservation Easement Areas in order to monitor Grantor's compliance herewith and otherwise enforce the terms of this Easement, provided that such entry shall be upon prior reasonable notice to Grantor and Grantee shall not unreasonably interfere with Grantor's use and quiet enjoyment of the Conservation Easement Areas; and

(iii) To prevent any activity on or use of the Conservation Easement Areas that is inconsistent with the Conservation Purposes of this Easement and to require the restoration of such area or features of the Conservation Easement Areas that may be damaged by any inconsistent activity or use, pursuant to subparagraphs B, C, and D of this paragraph 11.

B. In the event that a violation of the terms of this Easement by Grantor or by a third party comes to the attention of Grantee, Grantee shall notify Grantor in writing of such violation and demand corrective action sufficient to cure the violation. Where the violation involves injury to the Conservation Easement Areas resulting from any use or activity inconsistent with the purposes of this Easement, Grantee shall demand restoration of the portion of the Conservation Easement Areas so injured. If Grantor fails to cure the violation within thirty (30) days after receipt of such notice thereof from Grantee, or where the violation cannot reasonably be cured within thirty (30) days and Grantor fails to commence action to cure such violation, or fails to continue diligent action to cure such violation, Grantee may bring action at law or in equity in a court of competent jurisdiction to enforce the terms of this Easement. Grantee may enjoin the violation *ex parte* as necessary by temporary or permanent injunction restore the Conservation Easement Areas to the condition that existed prior to any such injury. Grantee shall be further entitled to recover any damages to which it may be entitled for violations of the terms of this Easement, or for injury to any Conservation value protected by the terms of this Easement, including

damages for the loss of scenic, aesthetic, or environmental values, and to require the restoration of the Conservation Easement Areas to the condition that existed prior to any such injury. Without limiting Grantor's liability therefor or assuming responsibility therefor, Grantee, in its sole discretion, may apply any damages recovered to the cost of undertaking corrective action on the Conservation Easement Areas.

C. Grantee's rights under this Paragraph 11 apply equally in the event of either actual or threatened violations of the terms of this Easement, and Grantor agrees that Grantee's remedies at law for any violation of the terms of this Easement are inadequate and that Grantee shall be entitled to the injunctive relief described in this Paragraph, both prohibitive and mandatory, in addition to such other relief to which Grantee may be entitled, including specific performance of the terms of this Easement, without necessity of proving either actual damages or the inadequacy of otherwise available legal remedies.

D. Any costs incurred by Grantee in enforcing the terms of this Easement against Grantor, including, without limitation, the costs of investigation, assessment, suit and attorneys' fees, and any costs of restoration necessitated by Grantor's violation of the terms of this Easement shall be borne by Grantor, provided that Grantor is determined to be responsible for a violation of the terms of this Easement, or to have permitted others to violate this Easement.

12. COSTS, LIABILITIES, AND ENVIRONMENTAL COMPLIANCE

A. Costs, Legal Requirements, and Liabilities. Grantor retains all responsibilities and shall bear all costs and liabilities of any kind related to the ownership, operation, upkeep, and maintenance of the Conservation Easement Areas, including taxes and the maintenance of adequate liability insurance coverage. While approval of Grantee may be required for certain construction, subdivision or other activity or use permitted by this Easement, Grantor remains solely responsible for obtaining any applicable governmental permits and approvals and all such construction, subdivision, or other activity or use shall be undertaken in accordance with all applicable federal, state, and local laws, regulations, and requirements.

B. Representations and Warranties. Grantor represents and warrants that, after reasonable investigation and to the best of his/her/their knowledge as of the date hereof:

(i) No substance defined, listed, or otherwise classified pursuant to any federal, state, or local law, regulation, or requirement as hazardous, toxic, polluting, or otherwise contaminating to the air, water, or soil, or in any way harmful or threatening to human health or the environment exists or has been released, generated, treated, stored, used, disposed of, deposited abandoned, or transported in, on, from, or across the Conservation Easement Areas;

(ii) There are not now any underground storage tanks located on the Conservation Easement Areas, whether presently in service or closed, abandoned, or decommissioned; and

(iii) There is no pending or threatened litigation in any way affecting, involving, or relating to the Conservation Easement Areas.

C. Remediation. If, at any time, there occurs, or has occurred, a release in or on the Conservation Easement Areas of any substance now or hereafter defined, listed, or otherwise classified pursuant to any federal, state, or local law, regulation, or requirement as hazardous, toxic, polluting, or otherwise contaminating to the air, water, or soil, or in any way harmful or threatening to human health or the environment, Grantor agrees to take all steps necessary to assure its containment and remediation, including any cleanup that may be required.

D. Control. Nothing in this Easement shall be construed as giving rise, in the absence of a judicial decree, to any right or ability in Grantee to exercise physical or managerial control over the day-to-day operations of the Conservation Easement Areas, or any of Grantor's activities on the Conservation Easement Areas, or otherwise to become an operator with respect to the Conservation Easement Areas within the meaning of The Comprehensive Environmental Responses, Compensation, and Liability Act of 1980, as amended, ("CERCLA"). Any action by Grantee such as maintenance of the Conservation Easement Areas or any other act by Grantee to protect the Conservation Easement Areas shall be deemed merely a gratuitous act which shall create no obligation on the part of Grantee.

13. SUCCESSORS IN INTEREST

Except where the context requires otherwise, the term "Grantor" and "Grantee", as used in this instrument, and any pronouns used in place thereof, shall mean and include, respectively, Grantor and his/her/their personal representatives, heirs, successors, and assigns, and Grantee and its successors and assigns.

14. SUBSEQUENT TRANSFERS/STATEMENT OF COMPLIANCE

Grantor hereby agrees to incorporate the terms of this Easement by reference in any deed or other legal instrument by which he/she/they divest himself/herself/themselves of any interest in all or any portion of the Conservation Easement Areas, including, without limitation, any leasehold interest. Grantor further agrees to give written notice to Grantee of the transfer of any interest at least thirty (30) days prior to the date of such transfer. Failure of Grantor to perform any act required by this paragraph shall not impair the validity of this Easement or limit its enforceability in any way.

Upon request by Grantor, Grantee shall within thirty (30) days execute and deliver to Grantor, or to any party designated by Grantor, any document, including a written statement of compliance, which certifies, to the best of Grantee's knowledge, that Grantor is in compliance with any obligation of Grantor contained in this Easement or otherwise, if Grantor is not in compliance with the terms and conditions of this Easement, stating what violations of this Easement exist. Such statement of compliance shall be limited to the condition of the Conservation Easement Areas as of Grantee's most recent inspection. If Grantor requests more current documentation, Grantee shall conduct an inspection, at Grantee's expense, within thirty (30) days of receipt of Grantor's written request therefor.

15. LIMITATION OF GRANTOR LIABILITY

Grantor, and each subsequent owner of the Conservation Easement Areas, shall have no personal liability for the observance or performance of the covenants and obligations of Grantor hereunder after such party

has conveyed his/her/their interest in the Conservation Easement Areas, provided that the provisions of Paragraph 14, above, have been fulfilled and all obligations thereunder discharged.

16. CHANGE IN ECONOMIC CONDITION

The fact that any use of the Conservation Easement Areas that is expressly prohibited by the terms of this Easement may become greatly more economically valuable than uses permitted by the terms of this Easement, or that neighboring properties may in the future be put entirely to uses that are not permitted by this Easement, has been considered by Grantor in granting this Easement. Grantor believes that any such changes in the use of neighboring properties will increase the benefit to the public of the continuation of this Easement, and Grantor and Grantee intend that any such changes shall not be deemed to be circumstances justifying the termination or extinguishment of this Easement. In addition, the inability of Grantor, his/her/their successors or assigns, to conduct or implement any or all of the uses permitted under the terms of this Easement, or the unprofitability of doing so, shall not impair the validity of this Easement or be considered grounds for its termination or extinguishment.

17. EXTINGUISHMENT OF EASEMENT AND USE OF NET PROCEEDS

A. Grantor acknowledges that this Easement constitutes a real property interest in the Conservation Easement Areas immediately vested in Grantee, and that such interest has a fair market value.

B. Grantor and any successors in interests, shall exhaust all legal remedies in order to preserve and protect the Conservation Purposes of this Easement.

C. In the event that all or part of this Easement is taken in exercise of eminent domain by public, corporate, or other authority so as to abrogate the conservation goals imposed by this Easement, Grantor shall take the appropriate action at the time of such taking to recover the full value of the taking and all incidental or direct damages resulting from the taking.

D. Net Proceeds. Grantor shall use its share of any net proceeds recovered as described in this Paragraph 17 exclusively for the acquisition of interests in land for uses consistent with the Conservation Purposes of this Easement.

18. HOLD HARMLESS

Grantor, and each subsequent owner of the Conservation Easement Areas, shall hold harmless, indemnify, and defend Grantee and its members, directors, officers, employees, agents, and contractors and his/her/their heirs, personal representatives, successors, and assigns of each of them (collectively "Indemnified Parties") from and against all liability (specifically including liability for violation of any law or regulation or failure to comply with any of the terms of this Easement), penalties, costs, losses, damages, expenses, causes of action, claims, demands, or judgements, including, without limitation, reasonable attorneys' fees, arising from or in any way connected with injury to or the death of any person, or physical damage to any property, resulting from an act, omission, condition, or other matter related to or occurring on or about the Conservation Easement Areas, regardless of cause, unless

due solely to the negligence of any of the Indemnified Parties. In no event shall this indemnity obligation exceed the limitations set forth in the Pennsylvania Sovereignty Immunity Act.

19. FAILURE OF GRANTEE TO ENFORCE

If at any time any organization, agency, or person having rights or duties hereunder as Grantee shall fail to enforce the restrictions set forth in this Easement, Grantor, or any governmental unit of Chester County, shall have the right to bring suit against Grantee for specific performance.

20. ASSIGNABILITY/TRANSFER OF GRANTEE'S INTEREST

A. Grantee and its successors and assigns shall have the right to assign either wholly or partially its right, title, and interest hereunder only to an organization able to enforce the restrictions contained herein which has purposes similar to those of Grantee, and which encompasses the purposes set forth in this Easement. Any such approval shall be subject to the prior written approval of Grantor. Such an organization must at the time of the assignment be a qualified organization within the meaning of Section 170(h)(3) of the Internal Revenue Code of 1986 (or its successor provisions), hereinafter the "Code", and one which is organized or operated primarily or substantially for one of the conservation purposes specified in Section 170(h)(4)(A) of the Internal Revenue Code. Any transfer or assignment of benefits by Grantee or its successor must require the transferee or assignee to carry out the Conservation Purposes of this Easement.

B. In the event Grantee shall cease to exist or to be a qualified organization as described in subparagraph 20A herein, its rights and duties hereunder shall become vested in and fall upon one of the following named entities to the extent such entity shall evidence acceptance of and agree to fully enforce same:

(i) Brandywine Conservancy;
(ii) Natural Lands Trust;
(iii) Chester County, a political subdivision of the Commonwealth of Pennsylvania; or
(iv) Such other organizations as may be designated under the doctrine of *cy pres* by a court of competent jurisdiction; provided, however, that at the time of such designation, such entity shall be an organization as described in subparagraph 20A of this Easement.

21. DISCRETIONARY CONSENT AND AMENDMENTS

Grantee recognizes that circumstances could arise which could justify the modification or waiver of certain prohibitions or restrictions contained in this Easement. To this end, Grantee shall have the right, in its sole discretion, to temporarily waive a restriction or permit an activity restricted or prohibited herein, and Grantee and Grantor shall mutually have the right, in their sole discretion, to agree to amendments to this Easement. Any such waiver or amendment must be consistent with the Conservation Purposes of this Easement and shall not result in an increase in the number of Residences permitted herein. Grantee shall have no right or power to agree to any waiver or amendment of this Easement or permit any activity restricted or prohibited by this Easement that would result in this Easement failing to qualify as a valid conservation easement under Section 170(h) of the Internal

Revenue Code of 1986, as amended, or to allow any residential, commercial or industrial Improvements or any commercial or industrial activities not provided for by this Easement.

22. EASEMENT IN PERPETUITY

The provisions hereof shall inure to and be binding upon the heirs, executors, administrators, devisees, successors, and assigns, as the case may be, of the parties hereto and shall be covenants running with the land in perpetuity.

23. SEVERABILITY

This Easement shall be construed in its entirety. However, in the event that any provision or restriction of this Easement or the application thereof to any person or circumstance is found to be invalid, the remainder of the provisions and restrictions of this Easement, and the application of such provision or restriction to persons or circumstances other than those as to which it is found to be invalid, shall not be affected thereby.

24. GOVERNMENTAL REGULATIONS

The provisions set forth in this Easement are in addition to those set forth in any ordinances, regulations, or laws of Willistown Township, Chester County, the Commonwealth of Pennsylvania, and the United States, and any agencies or authorities thereof. The most restrictive provision whether it be by this Easement or by a government ordinance, regulation, or law, shall control.

25. CAPTIONS

The captions in this Easement have been inserted solely for convenience of reference and are not a part of this Easement and shall have no effect upon construction or interpretation.

26. ACKNOWLEDGMENTS

A. Grantor has received and fully reviewed the Baseline Documentation and attests that it is a true, correct and complete summary of the Conservation Purposes of this Easement and is an accurate representation of the Conservation Easement Areas as of the date of this Easement.

B. Grantor attests that it is the sole owner of the Conservation Easement Areas and that the Conservation Easement Areas are not subject to a mortgage or lien as of the date of this Easement.

IN WITNESS WHEREOF, and again stating his/her/their intention to be legally bound hereby, the said parties have hereunto set his/her/their hands and respective seals on the day and year first above written.

Board of Supervisors of Willistown Township

_____ By: _____

ATTEST: ROBERT T. LANGE,
Vice Chairman

DATE

WILLISTOWN CONSERVATION TRUST, INC.

(Seal)

BY _____

ATTEST _____

County of Delaware)
State of Pennsylvania) ss.
)

BE IT REMEMBERED that on this day of , 2001, personally appeared before me, the Subscriber, a Notary Public for the State and County aforesaid, Robert T. Lange, Vice Chairman, Board of Supervisors, Willistown Township, a party to this Indenture, known to me personally to be such, and severally acknowledged this Indenture to be his/her deed.

GIVEN under my hand and seal of office, the day and year aforesaid.

_____
Notary Public

County of Delaware)
State of Pennsylvania) ss.
)

BE IT REMEMBERED that on this day of , 2001, personally appeared before me, the Subscriber, a Notary Public for the State and County aforesaid, Jeanne B. VanAlen, President of Willistown Conservation Trust, Inc., a corporation existing under the laws of the State of Pennsylvania, party to this Agreement, and acknowledge this Indenture to be her act and deed and the act and deed of said corporation; that the signature of the President thereto is in her own proper handwriting and the seal affixed is the common and corporate seal of said corporation, and that her act of sealing, executing, acknowledging and delivering said Indenture was duly authorized by a resolution of the Board of Directors of said corporation.

GIVEN under my Hand and Seal of Office, the day and year aforesaid.

_____
Notary Public

EXTENSION AND AMENDMENT TO
GRANT OF EASEMENT AND DECLARATION OF RESTRICTIVE COVENANTS

THIS EXTENSION AND AMENDMENT TO GRANT OF EASEMENT AND DECLARATION OF RESTRICTIVE COVENANTS, hereinafter referred to as this "Extension Agreement" made this day of , Two Thousand Three (2003), by and between WILLISTOWN TOWNSHIP, 688 Sugartown Road, Malvern, Pennsylvania 19355 ("Grantor") and WILLISTOWN CONSERVATION TRUST, a non-profit corporation of the Commonwealth of Pennsylvania, 7000 Goshen Road, Newtown Square, Pennsylvania 19073 ("Grantee"), by which they do covenant and agree to extend a conservation easement (originally identified as "Grant and Declaration") upon a portion of Grantor's property recently acquired and further represent:

WITNESSETH:

WHEREAS, Grantor is the owner of certain tract of ground known as the Okehocking Preserve, located in Willistown Township, Chester County, Commonwealth of Pennsylvania, containing approximately 132.094 acres of land, Uniform Identifier Number 54-8-14, 54-8-14.1, 54-8-14.2 and a part of 54 -8-14.2B (hereinafter called the "Original Property"). The Original Property was divided into four (4) Conservation Easement Areas (Areas "A", "B", "C" and "D" and herein designated "Original Easement Areas"), identified on a Plan prepared for Willistown Township by Chester Valley Engineers dated July 5, 2001, last revised July 30, 2001;

WHEREAS, Grantor granted in perpetuity to Grantee a Grant of Easement and Declaration of Restrictive Covenants upon the Original Easement Areas, which Grant was dated August 13, 2001, and recorded October 12, 2001 in the office of the Chester County Recorder of Deeds at Book 5085, Page 2299 (hereinafter the "Original Easement");

WHEREAS, the Grantor has recently acquired additional land, adjacent to the Original Property in Willistown Township, Chester County, Commonwealth of Pennsylvania, containing approximately 23.241 acres (net of existing right-of-ways) in Willistown Township, Chester County (hereinafter the "Additional Property"). The Additional Property lies along the north side of Route 3
(West Chester Pike) immediately west of Delchester Road and consists of parcels designated as Chester County UPI No. 54-8-14.2A and a portion of UPI No. 54-8-14.2B; and

WHEREAS, the Original Easement sets forth limitations on the use and development of the Original Easement Areas by, among other things, restricting the location and type of permanent structures that may be constructed and maintained within or upon them; and

WHEREAS, by this Agreement, the Grantor desires to place the Additional Property under the terms of the Original Easement, restricting the activities and further construction or development upon it; and

WHEREAS, the Additional Property is characterized as Conservation Easement Area "E" on a Plan prepared for Willistown Township by Chester Valley Engineers, dated October 13, 2003 and last revised October 28, 2003, (hereinafter designated "Additional Easement Area"), a copy of which plan is attached hereto as "Exhibit A";

WHEREAS, in furtherance of these objectives, Grantor and Grantee desire to extend and amend the Original Easement as hereinafter provided.

NOW THEREFORE, for and in consideration of the mutual promises herein contained and for the further consideration of the sum of One Dollar ($1.00) paid by Grantee to Grantor, the receipt of which is hereby acknowledged, Grantor and Grantee mutually agree to extend and amend the Original Easement as follows:

1. Excluding only the specifically defined references to "permitted activities" and "permitted Improvements" within its paragraphs 3 and 4, which subjects are

separately addressed within this Extension Agreement, the Original Easement and all its other provisions shall otherwise be extended and amended to cover and include Conservation Easement Area "E".

2. Paragraph 3.C of the Original Easement identifying "Additional Permitted Activities on the Conservation Easement Areas" is extended and amended to include subparagraph C.(v) which shall read:

"(v) Conservation Easement Area E: Passive and Low Impact Active Recreation."

3. Paragraph 4.A of the Original Easement containing "Definitions" applying to permitted Improvements is extended and amended to include subparagraphs A.(vi), (vii), (viii) and (ix) which shall read:

"(vi) Equipment Barn. Structure used for storage and maintenance of equipment for preserve uses and storage of municipal equipment.

"(vii) Access Drive. Drive used for access through the Conservation Easement Area.

"(viii) Parking Area. Area used for parking vehicles within the Conservation Easement Area.

"(ix) Footprint. The area of ground covered by an Improvement exclusive of open-air porches."

4. Paragraph 4.B of the Original Easement identifying "Existing Improvements" is extended and amended to include reference to Conservation Easement Area E which shall read:

"On Conservation Easement Area E:

(i) Access Drive;

(ii) Parking Area;

(iii) Equipment Barn. Footprint of existing Equipment Barn is five thousand two hundred (5,200) square feet and is not to be expanded or include an addition;

(iv) Utility Facilities"

5. Paragraph 4.C of the Original Easement identifying "Permitted Additional Improvements" is extended and amended to include reference to Conservation Easement Area E which shall read:

"On Conservation Easement Area E:
(i) Access Drives;
(ii) Parking Areas;

(iii) A new Equipment Barn may be constructed in the "Acceptable Equipment Barn Area" when the existing Equipment Barn is removed. The Footprint of the new Equipment Barn shall not exceed two thousand six hundred (2,600) square feet;
(iv) Utility Facilities
(v) Fences. Such fences shall be set back a minimum of thirty (30) feet from the edge of any public road."

6. By entering into this Agreement, Grantee shall not be deemed to have waived (i) any breach or violation which may now or hereafter exist under the Original Easement, (ii) any claim which Grantee may now or hereafter have against Grantor or (iii) any right or remedy to which Grantor may be entitled.

7. Except as extended or amended by this Extension Agreement all of the terms, covenants, conditions and provisions of the Original Easement shall remain in full force and effect and are hereby ratified and affirmed. This Agreement shall not be binding until executed and delivered by all parties hereto.

IN WITNESS WHEREOF, and again stating their intention to be legally bound thereby, the said parties have hereunto set their hands and respective seals the day and year first above written.

GRANTOR:
BOARD OF SUPERVISORS OF
WILLISTOWN TOWNSHIP

ATTEST:_____ BY:_____

DAVID W. RAWSON,
Vice Chairman

GRANTEE:
WILLISTOWN CONSERVATION TRUST

ATTEST:_____ BY:_____
JEANNE B. VAN ALEN,
President

(SEAL)

COMMONWEALTH OF PENNSYLVANIA :
: ss
COUNTY OF :

BE IT REMEMBERED that on this day of , 2003 personally appeared before me, the Subscriber, a Notary Public for the State and County aforesaid, , , Board of Supervisors, Willistown Township, a party to this Indenture, known to me personally to be such, and severally acknowledged this Indenture to be his deed.

GIVEN under my hand and seal of office, the day and year aforesaid.

_____
Notary Public

COMMONWEALTH OF PENNSYLVANIA :
: ss
COUNTY OF :

BE IT REMEMBERED that on this day of , 2003, personally appeared before me, the Subscriber, a Notary Public for the State and County aforesaid, Jeanne B. Van Alen, President of Willistown Conservation Trust, Inc., a corporation existing under the laws of the State of Pennsylvania, party to this Agreement, and acknowledge this Indenture to be her act and deed and the act and deed of said corporation; that the signature of the President thereto is in her own proper handwriting and the seal affixed is the common and corporate seal of said corporation, and that her act of sealing, executing, acknowledging and delivering said Indenture was duly authorized by a resolution of the Board of Directors of said corporation.

GIVEN under my Hand and Seal of Office, the day and year aforesaid.

_____

Notary Public

FEBRUARY 16, 2006
RETURN TO and PREPARED BY:
Timothy B. Barnard, Esquire
218 West Front Street
Media, PA 19063
(610-565-4055)

UPI#'s

SECOND EXTENSION AND AMENDMENT TO GRANT OF EASEMENT AND DECLARATION OF RESTRICTIVE COVENANTS

THIS SECOND EXTENSION AND AMENDMENT TO GRANT OF EASEMENT AND DECLARATION OF RESTRICTIVE COVENANTS, hereinafter referred to as this "Second Easement Extension"

made this day of , Two Thousand Six (2006), by and between WILLISTOWN TOWNSHIP, 688 Sugartown Road, Malvern, Pennsylvania 19355 ("Grantor") and WILLISTOWN CONSERVATION TRUST, a non-profit corporation of the Commonwealth of Pennsylvania, 925 Providence Road, Newtown Square, Pennsylvania 19073 ("Grantee"), by which they do covenant and agree to further extend the conservation easement (originally identified as "Grant and Declaration") upon a portion of Grantor's property recently acquired and further represent:

WITNESSETH:

WHEREAS, Grantor is the owner of certain tract of ground known as the Okehocking Preserve, located in Willistown Township, Chester County, Commonwealth of Pennsylvania, containing approximately 132.094 acres of land, Uniform Identifier Number 54-8-14, 54-8-14.1, 54-8-14.2 and a part of 54-8-14.2B (hereinafter called the "Original Property"). The Original Property was divided into four (4) Conservation Easement Areas (Areas "A", "B", "C" and "D" and herein designated "Original Easement Areas"), identified on a Plan prepared for Willistown Township by Chester Valley Engineers, Inc. dated July 5, 2001, last revised July 30, 2001;

WHEREAS, Grantor granted in perpetuity to Grantee a Grant of Easement and Declaration of Restrictive Covenants upon the Original Easement Areas, which Grant was dated August 13, 2001, and recorded October 12, 2001 in the office

of the Chester County Recorder of Deeds at Book 5085, Page 2299 (hereinafter the "Original Easement");

WHEREAS, the Grantor thereafter acquired further land, adjacent to the Original Property (hereinafter called the "First Subsequent Property") containing 23.241 acres, more or less, situated in Willistown Township, Chester County, Pennsylvania, comprising two lots, Parcels A-1 and A-2, which parcels are reflected on the Final Subdivision Plan for Okehocking Associates prepared by Chester Valley Engineers, Inc. and dated June 6, 2003, last revised August

19, 2003 ("Subdivision Plan"), and thereafter recorded, being UPI #54-8-14.2A and a portion of UPI #54-8-14.2B;

WHEREAS, Grantor then extended and amended the Original Easement by a document entitled Extension and Amendment to Grant of Easement and Declaration of Restrictive Covenants (hereinafter the "First Easement Extension"), dated October 30, 2003, and recorded in the Official Records of Chester County, Pennsylvania, on November 18, 2003 in Book 5961, Page 1401, to include the First Subsequent Property, a portion of which easement was thereafter assigned to Willistown Land Conservation Authority by Assignment of Grant of Easement and Declaration of Restrictive Covenants dated April 4, 2005, and recorded in the Official Records of Chester County, Pennsylvania, on April 6,2005 in Book 6453, Page 1700.

WHEREAS, the Grantor has recently acquired additional land, adjacent to the First Subsequent Property in Willistown Township, Chester County, Commonwealth of Pennsylvania, containing approximately 10 acres (net of existing right-of-ways) in Willistown Township, Chester County (hereinafter the "Second Subsequent Property"). The Second Subsequent Property lies along the north side of Route 3 (West Chester Pike) immediately west of Delchester Road and consists of the parcel designated as Chester County UPI No. 54-8-14.2A; and

WHEREAS, the Original Easement, as thereafter extended, sets forth limitations on the use and development of the Original Easement Areas by, among other things, restricting the location and type of permanent structures that may be constructed and maintained within or upon them; and

WHEREAS, by this Agreement, the Grantor desires to incorporate the Second Subsequent Property under the terms of the Original Easement, restricting the activities and

further construction or development upon it as is there and here provided; and

WHEREAS, the Second Subsequent Property is characterized as Conservation Easement Area "F" on a Plan prepared for Willistown Township by Chester Valley Engineers, Inc. , dated January , 2006 and last revised , 2006, (hereinafter designated "Second Additional Easement Area"), a copy of which plan is attached hereto as "Exhibit A";

WHEREAS, the Grantor desires to reserve the right to construct a building for limited Township use upon one of the properties here designated;

WHEREAS, by this transaction and in recognition of the significant benefit of precluding such construction upon the Second Subsequent Property, Grantee has expressed a willingness to modify and amend the restrictions on Area "D" on the Original Easement to allow such a structure;

WHEREAS, in furtherance of these objectives, Grantor and Grantee desire to further extend, modify and amend the Original Easement as hereinafter provided.

NOW THEREFORE, for and in consideration of the mutual promises herein contained and for the further consideration of the sum of One Dollar ($1.00) paid by Grantee to Grantor, the receipt of which is hereby acknowledged, Grantor and Grantee mutually agree to extend, modify and further amend the Original Easement as follows:

1. Excluding only the specifically defined references to "permitted activities" and "permitted Improvements" within its paragraphs 3, 4 and 5, which subjects are separately addressed within this Second Easement Extension, the Original Easement and all its other provisions shall otherwise be extended and amended to cover and include Conservation Easement Area "F".

2. Paragraph 3.C of the Original Easement identifying "Additional Permitted Activities on the Conservation Easement Areas" is further extended and amended to include subparagraph C.(vi) which shall read:

3.C

"(vi) Conservation Easement Area F: Passive and Low Impact Active Recreation."

3. Paragraph 4.A of the Original Easement containing "Definitions" applying to permitted Improvements is extended and amended to include subparagraph A.(vi) which shall read:

4.A

"(vi) Educational/Community Center. Township structure for the limited purpose of environmental education and community meeting use, the size of which shall not exceed 10,000 square feet of Gross Floor Area."

4. Paragraph 4.C of the Original Easement identifying "Permitted Additional Improvements" is extended and amended to
(i) insert a reference to Utility Facilities to serve an "Educational/Community Center" within Conservation Area B, (ii) insert a reference to an "Educational/Community Center" within Conservation Easement Area D and (iii) include a reference to Conservation Easement Area F, each of which provisions shall thereafter read:

4.C

"On Conservation Easement Area B:
(i) Recreational Improvements consistent and associated with Passive Recreation as defined in Paragraph 3A above;
(ii) Pond(s) subject to the limitations set forth in Paragraph 6H herein;
(iii) Fences; and
(iv) Utility Facilities to serve the existing barn owned by Grantee as shown on Exhibit "A" and/or to serve the Educational/Community Center on Conservation Easement Area D."

"On Conservation Easement Area D:
(i) One (1) Secondary Residence related to Conservation easement Area uses, and shall be located in Acceptable Residential Location as shown on Exhibit "A";
(ii) One (1) Attached Apartment related to Conservation Easement Area uses;

(iii) Educational/Community Center in lieu of and in the approximate location where the existing barn is now located;
(iv) Access Drives;
(v) Parking Areas;
(vi) Recreation Improvements consistent and associated with Active Recreation consistent with Historic Integrity as defined in Paragraph 3A;
(vii) Pond(s), subject to the limitations set forth in Paragraph 6H;
(viii) Fences.
(ix) Utility Facilities;
(x) Structures associated with Conservation Easement Area storage and maintenance; and
(xi) Structures associated with commercial use as defined in Paragraph 3C(iv)."

"On Conservation Easement Area F:
(i) Access Drives;
(ii) Parking Areas;
(iii) Utility Facilities;
(iv) Fences. Such fences shall be set back a minimum of thirty (30) feet from the edge of any public road."

5. Paragraph 4.D of the Original Easement entitled "Architectural Design and Materials" shall be amended to read:

4.D Architectural Design and Materials. Where applicable and feasible, all Improvements constructed on the Conservation Easement Areas shall be a design compatible with traditional Chester County eighteenth or nineteenth century rural architecture. The height of any dwelling structure shall not exceed thirty-five (35) feet when measured from grade level to the highest point of the roof, exclusive of chimneys or other appurtenances. The materials to be used on the exterior of any dwelling shall be of fieldstone, wood, old brick, or stucco over stone, and the roofing materials shall be of cedar shingle or standing seam metal. Other materials may be used with the prior written approval of Grantee.

In order to ensure the continuity of architectural styles in the vicinity of Okehocking Preserve, but to recognize the capability of new architectural concepts for non-dwelling Improvements, the Educational/Community Center permitted in Conservation Easement Area D will utilize an architectural design that incorporates where applicable and

feasible similar features, materials, and details as the local existing structures, with the freedom to incorporate elements of energy efficiency.

Grantor's purpose in extending to Grantee the right and duty under this Paragraph 4.D to monitor architectural design and materials used is to protect the Conservation Purposes and scenic value of this Easement.

6. By entering into this Agreement, Grantee shall not be deemed to have waived (i) any breach or violation which may now or hereafter exist under the Original Easement, (ii) any claim which Grantee may now or hereafter have against Grantor or (iii) any right or remedy to which Grantor may be entitled.

7. Except as extended or amended by this Second Easement Extension all of the terms, covenants, conditions and provisions of the Original Easement, as previously amended, shall remain in full force and effect and are hereby ratified and affirmed. This Agreement shall not be binding until executed and delivered by all parties hereto.

IN WITNESS WHEREOF, and again stating their intention to be legally bound thereby, the said parties have hereunto set their hands and respective seals the day and year first above written.

GRANTOR:
BOARD OF SUPERVISORS OF
WILLISTOWN TOWNSHIP

ATTEST:_____ BY:_____
DAVID W. RAWSON,
Vice Chairman

GRANTEE:
WILLISTOWN CONSERVATION TRUST

ATTEST:_____ BY:_____
JEANNE B. VAN ALEN,
President

(SEAL)

COMMONWEALTH OF PENNSYLVANIA :
: ss
COUNTY OF :

BE IT REMEMBERED that on this day of , 2006 personally appeared before me, the Subscriber, a Notary Public for the State and County aforesaid, , , Board of Supervisors, Willistown Township, a party to this Indenture, known to me personally to be such, and severally acknowledged this Indenture to be his deed.

GIVEN under my hand and seal of office, the day and year aforesaid.

_____
Notary Public

COMMONWEALTH OF PENNSYLVANIA :
: ss
COUNTY OF :

BE IT REMEMBERED that on this day of , 2006, personally appeared before me, the Subscriber, a Notary Public for the State and County aforesaid, Jeanne B. Van Alen,

President of Willistown Conservation Trust, Inc., a corporation existing under the laws of the State of Pennsylvania, party to this Agreement, and acknowledge this Indenture to be her act and deed and the act and deed of said corporation; that the signature of the President thereto is in her own proper handwriting and the seal affixed is the common and corporate seal of said corporation, and that her act of sealing, executing, acknowledging and delivering said Indenture was duly authorized by a resolution of the Board of Directors of said corporation.

GIVEN under my Hand and Seal of Office, the day and year aforesaid.

_____

Notary Public

OKEHOCKING PRESERVE MANAGEMENT PLAN

APPENDIX 8

Forest Buffer Toolkit

(PA Stream ReLeaf Program Excerpts)

Forest Buffer Toolkit

Replanting Pennsylvania's Streamsides

Stream REALEAF

Stream ReLeaf®

Forest Buffer Toolkit

The **Pennsylvania Stream ReLeaf Forest Buffer Toolkit** was developed by the Alliance for the Chesapeake Bay under a grant from the Pennsylvania Nonpoint Source Management Program, Pennsylvania Department of Environmental Protection (DEP). Funding was provided by DEP through Section 319 of the federal Clean Water Act administered by the Environmental Protection Agency.

Special credit to the *Chesapeake Bay Riparian Handbook: A Guide for Establishing and Maintaining Riparian Forest Buffers* (Chesapeake Bay Program) upon which the planting guide drew heavily and to the *Riparian Forest Buffer* series written by Robert Tjaden, Maryland Cooperative Extension Service.

Acknowledgement is also given to *Native Trees, Shrubs & Vines for Urban & Rural America: A Planting Design Manual for Environmental Designers* by Gary L. Hightshoe, 1998, for the illustrations and facts on selected native trees contained in the text of the toolkit. Reprinted with permission of John Wiley & Sons, Inc.
We also credit the publication *Vascular Flora of Pennsylvania* for the use of the physiographic province map of Pennsylvania.

The **Stream ReLeaf** logo is used by agreement with American Forests.

Alliance for the Chesapeake Bay

DEP

September 2000

For additional copies of this toolkit, contact the Pennsylvania Department of Environmental Protection, Bureau of Watershed Conservation at (717) 787-5259, or visit DEP through its homepage at www.dep.state.pa.us -- choose information by Subject/Stream ReLeaf.

Table of Contents

Introduction 1
- ☐ Purpose of Toolkit
- ☐ Why Reforest Pennsylvania's Streamsides?
- ☐ Pennsylvania's Stream ReLeaf Initiative
- ☐ The Importance of Headwater Streams

Functions of Streamside Forests 4

Nine Steps to a Streamside Forest Site Plan 6
- ☐ The Virtues of a Streamwalk
- ☐ Make Sure Your Site is Suitable for Restoration
- ☐ Obtain Landowner Permission and Support
- ☐ Analyze Your Site's Physical Conditions
- ☐ Analyze Your Site's Vegetative Features
- ☐ Draw a Map of the Site
- ☐ Create a Design that Meets Multiple Objectives
- ☐ Drawing a Planting Plan
- ☐ Prepare Your Site Ahead of Time
- ☐ Determine Maintenance Needs

Buffer Establishment 25
- ☐ Purchasing Plants
- ☐ Planting Layout: Marking the Site
- ☐ Planting Practices

Buffer Maintenance and Monitoring 33
- ☐ Long Term Management and Monitoring
- ☐ Watering
- ☐ Mulching

Volunteers and Securing Tools 36

Working with the Media - Getting the Word Out 38

Appendices:
1. Native Riparian Tree/Shrub Plant List
2. Pennsylvania Nursery List
3. Sample Volunteer Waiver of Liability Form
4. Streamside Forest Buffer Checklist for Success
5. Technical and Financial Sources of Assistance
6. References and Sources of Information
7. Relevant Field Guides to Trees and Shrubs
8. Pennsylvania Stream ReLeaf - Data Entry Form
9. Sample Forest Buffer Site Plan Form

List of Figures

Figure 1: Chesapeake Bay drainage area in Pennsylvania 2
Figure 2: Stream Orders 3
Figure 3: Functions of Streamside Forests 4
Figure 4: Range of Minimum Widths for Meeting Specific Buffer Objectives 12
Figure 5: Sample Planting Recommendations According to Moisture Conditions 15
Figure 6: Sample Planting Plan 19
Figure 7: Site before Conceptual Plan 20
Figure 8: Sample Conceptual Planting Plan 21
Figure 9: Sample Forest Buffer Site Plan 24
Figure 10: Heeling in Seedlings to Protect Roots 28
Figure 11: Tree Planting Tools 30
Figure 12: Slit Method of Planting 30
Figure 13: Side-hole Method of Planting 31

List of Tables

Table 1: Riparian Forest Buffer Installation Costs: Per Acre Estimated Costs 13
Table 2: Types of Tools Needed for Reforestation Projects 37

OKEHOCKING PRESERVE MANAGEMENT PLAN

APPENDIX 9

Photo Log

Photo #1

Photo #2

Photo #3

Photo #4

Photo #5

Photo #6

Photo #7

Photo #8

Photo #9

Photo #10

Photo #11

Photo #12

Photo #13

Photo #14

Photo #15

Photo #16

Photo #17

Photo #18

Photo #19

Photo #20

Photo #21

Photo #22

Photo #23

Photo #24

Photo #25

OKEHOCKING PRESERVE MANAGEMENT PLAN

APPENDIX 10

Public Participation Records

APPENDIX 10
PUBLIC PARTICIPATION RECORDS
OKEHOCKING PRESERVE MANAGEMENT PLAN 2006

This plan differs from many DCNR funded plans in that it is for the management of one somewhat small municipal park property and not for the typical larger scale plans funded by DCNR such as watershed conservation plans which cover many municipalities, and oftentimes more than one County – necessitating significant public outreach and input and coordination. Public input, municipal input and consultant expertise result in this management plan for Okehocking Preserve. The following summary describes the public and municipal input to the plan.

Summary

Shortly after Willistown Township took title to the Okehocking Preserve in 2001, a Preserve Committee was formed to advise on the Preserve's development and management. This seven member Willistown resident volunteer committee was assigned as the steering committee for the Management Plan (Plan) to work with the two consultants - Willistown Conservation Trust and Gaadt Perspectives, LLC. (The Willistown Conservation Trust has since withdrawn as a consultant.) Committee members are representative of different age groups, income levels and residential areas of the Township.

The Committee, which eventually became the reconstituted Township Environmental Advisory Council, meets on a monthly basis. Member's areas of interest and expertise include ecology, recreation, history, architecture, security, botany and land management. Issues discussed in Committee meetings with regard to the management of Okehocking were considered by the consultants and incorporated into the Plan where fitting. The process was dynamic as past discussions were not always representative of the final plan's content because some issues were reevaluated.

The Township Planning Commission and Parks and Recreation Board also reviewed and approved the Plan. The Township Supervisors were also consulted on the management concepts for the property, as they are the final decision makers and final stamp of approval at the municipal level. The Supervisors approved the draft plan submitted to DCNR at a public meeting and will formally approve the final plan at a public meeting once DCNR signs off.

Another critical component of the public input solicited for the Plan is Willistown's many community partner organizations including the Upper Main Line YMCA, Valley Forge Audubon Society, Natural Lands Trust, Delaware County Anglers and Conservationists, and the Natural Resources Conservation Service. These partners were consulted and their expertise and interests represented in the text of the Plan (specific contact info is included in the bibliography.)

The Township advertised the public meeting in its Township newsletter (distribution of over 4,500 – to all households and businesses in the Township). The article also announced that the draft Plan was posted on the Township web site and a copy was available at the Township building for public viewing and comment. The public meeting was also advertised on the two Township Memo Boards (located on busy public roads). Transcripts were taken at the public meeting and at the final draft review meeting of the Environmental Advisory Council (Plan steering committee).

Participation/Input Details

Plan Steering Committee:

LIST OF MEMBERS

Mat Davis: Architect, professor.

Brian Raicich: Director of Environmental Education and Youth Camps, Upper Main Line YMCA.

Jill Red: Home maker, history.

Bill Rosenberry: Township Manager at the time of writing.

Kelly Tickner: Home maker.

Alex Van Alen: Project Consultant for a period of time. Director of Stewardship, Willistown Conservation Trust.

Coleman Walsh: Retired attorney.

MEETING DATES AND PLAN DISCUSSION SUMMARIES

October 22, 2002: Mat Davis, Jill Red, Bill Rosenberry, Kelly Tickner, Alex Van Alen, Coleman Walsh

- Discussed the Plan and the committee's role in guiding it. Committee will work with the consultant and review and comment on a regular basis.
- Discussed issues such as signage and trail location.

January 7, 2003: Mat Davis, Jill Red, Bill Rosenberry, Kelly Tickner, Alex Van Alen, Coleman Walsh

- Discussed deer management issues. Reducing the population will be necessary to protect habitat and riparian restoration projects.
- Discussed bird survey being enacted by Valley Forge Audubon Society. This will be a baseline and incorporated into Plan.

February 25, 2003: Mat Davis, Jill Red, Bill Rosenberry, Kelly Tickner, Alex Van Alen, Coleman Walsh, Brian Raicich

- Discussed Vision Statement for Okehocking Preserve
- Discussed need for riparian restoration. Specific areas were discussed and added to Plan.
- Discussed hiring of a Preserve Manager to implement Plan.
- Discussed trail location and mapping.
- Other issues: Parking Areas, restoration of Garrett House.

March 25, 2003: Mat Davis, Jill Red, Bill Rosenberry, Kelly Tickner, Alex Van Alen, Coleman Walsh, Brian Raicich

- Reviewed Parking Areas as presented in draft Plan.
- Discussed signage and locations.
- Discussed trail locations.
- Discussed partnerships, including Eagle Scouts. Scout will be building a bridge over Delchester Run as in Draft Plan.

- Preserve Manager job description written for inclusion in plan.

April 22, 2003: Mat Davis, Jill Red, Bill Rosenberry, Kelly Tickner, Alex Van Alen, Coleman Walsh, Brian Raicich

- Discussed locations and plans for riparian restoration, meadow management, display kiosks to be incorporated into Plan.

June 12, 2003: Mat Davis, Jill Red, Bill Rosenberry, Kelly Tickner, Alex Van Alen, Coleman Walsh, Brian Raicich

- Recreational component of Plan discussed. Brian Raicich from YMCA to help guide this aspect of Plan.
- Discussed potential restoration of historic Garrett Barn. To be incorporated into Plan.
- Restoration of Garrett House. May be used to house Preserve Manager or other to keep an eye on Preserve.
- Eagle Scout will begin building bridge as called for in Draft Plan.
- Audubon Bird Census continues.

July 15, 2003: Mat Davis, Jill Red, Bill Rosenberry, Kelly Tickner, Alex Van Alen, Coleman Walsh, Brian Raicich

- Discussed deer management. Will be an important component of Plan.
- Discussed mapping of trails and other features for plan.
- Okehocking will expand by 23 acres in September. Plan will also incorporate these acres.
- Discussed planting of Warm Season Grasses. Plan will promote these and other native habitat restorations.

August 26, 2003: Mat Davis, Jill Red, Bill Rosenberry, Kelly Tickner, Alex Van Alen, Coleman Walsh, Brian Raicich

- Completed sections of Draft Plan and distributed to Committee members for review and comment at next meeting.
- Discussed issues with meadow management. Partnership with NRCS and USFWS to manage grasses.
- Township Supervisors approved draft Plan's recommendation for Preserve Manager position.

September 11, 2003: Mat Davis, Jill Red, Bill Rosenberry, Kelly Tickner, Alex Van Alen, Coleman Walsh, Brian Raicich

- Committee discussed draft Plan and approved sections completed to date.

October 23, 2003: Mat Davis, Jill Red, Bill Rosenberry, Kelly Tickner, Alex Van Alen, Coleman Walsh, Brian Raicich

- Discussed further priorities for Plan.
    - Enhancing educational component
    - Incorporating fate of Garrett Barn
    - Importance of weed management.

December 4, 2003: Mat Davis, Jill Red, Bill Rosenberry, Kelly Tickner, Alex Van Alen, Coleman Walsh, Brian Raicich

- Discussion of Search for Preserve Manager to implement Plan

February 6, 2004: Mat Davis, Jill Red, Bill Rosenberry, Kelly Tickner, Alex Van Alen, Coleman Walsh

- New sections of draft Plan submitted to Committee for review and comment at next meeting.
- Discussed suggesting to supervisors that shotgun hunting be incorporated into plan to control deer population.
- Discussed needs for Preserve Manager. Plan will incorporate these needs, such as a truck and other equipment.

March 5, 2004: Mat Davis, Jill Red, Bill Rosenberry, Kelly Tickner, Alex Van Alen, Coleman Walsh

- Committee reviewed draft plan. Additional suggestions included the thought of putting a composting toilet into the Garrett Barn. Restoration of Barn should also be incorporated into Plan.
- Discussed dog related problems. Committee suggested that dog issues should be addressed in Plan.

April 29, 2004: Mat Davis, Jill Red, Bill Rosenberry, Kelly Tickner, Alex Van Alen, Coleman Walsh, Brian Raicich

- Discussed meadow management section of Plan. Restoration of native habitat will be a critical component of Plan.

July 23, 2004: Mat Davis, Jill Red, Bill Rosenberry, Kelly Tickner, Alex Van Alen, Coleman Walsh,

- Discussed importance of resolving problem of dilapidated barn in Plan.
- Discussed incorporating deer exclosures as part of Plan.

August 26, 2004: Kelly Tickner, Coleman Walsh, Alex Van Alen, Mary McLoughlin, Brian Raicich, Jill Red

- Committee suggested that Township hire an engineer to determine status of barn. Results will determine how barn is handled in Plan.

September 16, 2004: Kelly Tickner, Coleman Walsh, Alex Van Alen, Mary McLoughlin

- Director of Parks and Preserves has been hired, in part to implement Plan (this position replaced that of Preserve Manager).
- Committee further discussed the issues of the Garrett Barn and the Weed Management section of the Plan.

October 14, 2004: Alex Van Alen, Kelly Tickner, Mat Davis and Mary McLoughlin

- Discussed mowing schedule and its effect on wildlife. Mowing plan will be incorporated into Plan to reduce any negative effects, particularly on nesting birds.
- Weed management and managed hunting events were discussed. Additional weed management information will be included in the Plan.

November 17, 2004: Mat Davis, Mary McLoughlin, Brian Raicich, Jill Red, and Kelly Tickner.

- Weed management funds were allotted in the 2005 budget; the weed management for Okehocking will be included in the mowing bid package for the Preserve. It was concluded that more detail in the Preserve Management Plan on weed management was necessary including a time line for specie specific management activities and details of those activities.
- Discussion followed on the makeup of the Delchester Run hedgerows and the problem with multiflora rose. Hedgerow removal was a priority set by the Committee earlier this year.

- Discussion on ecological signage for the Preserve. The consensus is that unobtrusive educational signage is appropriate for the Preserve.
- Spray Fields to Drip. Discussion regarding proposal to turn the spray fields into drip irrigation fields, as it would give about 10 acres as a dog run area. It is very costly to install drip irrigation.
- Additional Parking at Delchester. The need for more parking was discussed and it was agreed that overflow parking is necessary.

December 15, 2004: John Gaadt, Alex Van Alen, Mary McLoughlin, Kelly Tickner, Mat Davis, Brian Raicich

- Discussion was held regarding the importance of ecological explanations for the management goals of the Plan and tying the existing wildlife and land resources to the management directives. It was agreed that this approach should be taken.

January 3, 2005: Board of Supervisors

- Environmental Advisory Committee (EAC) was established out of the Preserve Committee at organizational meeting of the Board of Supervisors.

Feb 17, 2005: Alex Van Alen, Mary McLoughlin, Jill Red, Kelly Tickner, Mat Davis

- First EAC meeting held and status of Plan draft discussed.

April 26, 2005: Mat Davis, Jill Red, Kelly Tickner, Alex Van Alen, Coleman Walsh, John Gaadt

- Discussion was held regarding WCT's desire to limit their future involvement in the plan given other commitments; consensus was that Gaadt Perspectives, LLC would complete the plan with Township involvement.

November 3, 2005: Brian Raicich, Mathew Davis, Mary H. McLoughlin, Alex Van Alex, Jill Red, Coleman Walsh, Doug Tietbohl

- Discussion regarding plan progress indicated that draft materials would be available for review by Friday Nov 18.

December 1, 2005: Mat Davis, Brian Raicich, Kelly Tickner, Jill Red, Alex Van Alen, Cole Walsh, Doug Tiebold, John Gaadt, Mary McLoughlin

Draft Review Meeting Transcript –

- Meeting lead by John Gaadt, Consultant, and Mary McLoughlin, Willistown Director of Parks and Preserves
- Comments/questions in regular text, responses from John and Mary in *italics (where called for)*
- Environmental Advisory Council members: Mat Davis, Brian Raicich, Kelly Tickner, Jill Red, Alex Van Alen, Cole Walsh, Doug Tiebold

Executive Summary

Upper Ridley Creek Greenway very good to mention, add Important Bird Area in this section, Willistown Conservation Trust will send map for appendix

Who's doing the management…resource to get it all done may be a challenge over time, could have greatest plan in the world but need assistance to get it done; mention need for partnerships to make this happen; mention need for funding opportunities.

Is there list of 6 items, are there priorities within that? Is it appropriate to talk about priorities. *All mission items equally important.*

Introduction

P 14 add Important Bird Area second paragraph to the bottom
P 15 elevation changes less than 500 feet
P 16 cut geologic an acronym references as they do not reference a map or anything
P 17 have West Chester University to volunteer time to assess vernal pools for obligate species; Brian's old firm may donate time to do assessment; Mat - contacts at Temple U may help
P 18 WCT (Willistown Conservation Trust) will improve the trail not relocate
-two periods in the second paragraph page 2 uncap Vision
-hillside going into spray field, a couple bobolinks seen by YMCA
-include invasive management with the deer deterrent in restoration projects as a requirement
- no evidence of grassland birds at Okehocking – but at Kirkwood WCT is managing for them
- Grape vine native vine, manage for wildlife benefit, insure doesn't get invasive do not
– invasive section p 30 – invasive birds include here? Known problem around here – cowbirds and starlings; cowbirds are native…frightened of interior of woodlands – core woodlands important for neotropical migratory birds…150' how far cow birds go into woodland; have been seen at Okehocking; starlings around the barns if at all.
– p 31 Add working with neighboring landowners on deer management – coordinate hunting dates among neighboring properties…WCT will help us with that.
Route 3 an intrusion? *No it's a boundary*
– document existing wells; DEP may want to know about the well, may want to use if for monitoring; introduce to management section too
p 43 top – agricultural areas? *Yes we may have future areas.*
-Typo top of page 54
- add dog website info – and enforcement and insert with safety as well
– low key signs and think about location of signs p 56…add marker system
– 58 and 59 – farmers market…at Garrett Mill not Preserve; doesn't fit my idea of the Preserve
- Fits practicality if you have to schlep it
- Be sure to correspond with grant funders on any activities in concept prior to planning efforts; demonstration area; page 59.
– p 57b cut WCT objecting to barn removal
P 61 July 15 at the earliest, preferably Sept 1; do a search for these dates and correct; invasive mowing a priority
P 64 – 65 numbering –1.o1, 1.02, etc.

Maps

No comments on maps; looked through all

Appendices

grape – manage, not eradicate priority project list
- volunteer monitoring program by partners- Check to be sure this is in the Monitoring section…if someone is doing a nature hike, have a wildlife and invasive specie spot check program

Public Meeting Transcript
Location: Willistown Township
March 8, 2006 7PM

Meeting Started at 7PM, 22 people total; Sign in sheet circulated

Power Point Presentation by John Gaadt, project consultant.

Public Input
Questions/Comments (in regular text) and *Answers/Responses (in italics when called for)*:
Is this plan fate accompli? *John responded that there was time for comment and asked for people to submit their public comment within 30 days if they didn't want to give comment tonight.*
Will the supervisors approve something? *Yes, they will approve the final plan and have already approved this draft. John reiterated that the Township welcomed everyone's comments.*
What is the recommendation for deer control? *Plant control & hunting.*
Have you considered free roaming dogs within fences? I live next to this park and share the deer with the park. My dogs keep them away when they are out.
Assuming you can control the deer, what are you going to do about the invasives?
Removal, limited burns, chemical treatments will all be considered. Depends on where you are on property what would work. Climbing invasives most critical. Cutting back works, but need to spray as well to control.
How many of township residents using the park every day? *Don't know for sure, but it gets lots of use.*
Where does impetus for environmental center discussed in the plan come from? *From the township and partner organizations. Valuable asset.*
What are "monitor overuse" considerations? *All needs to be monitored over time, can't predict everything.*

I did read the plan, it's very long. I'm concerned that we have a large property and don't want it developed in any way. Are we going to have a board overseeing this other than the Board of Supervisors and Parks & Recreation? *We don't envision development, explained that Township manager has control of daily activities and Supervisors overall control, only the Nature Center is a planned development and will be on an old building site.*
New trails being cut and parking is full at times, it was better before parking lots were enlarged. It would be better to not develop anything. *Many groups and a huge effort to protect this land and make sure no development takes place. Boy Scouts are doing the trail work.*
What committee do I get on to voice my opinions? *The Environmental Advisory Council was outlined.*
I was on the property today, what are we doing about others using the preserve? *The property is open to the public.*
Why aren't there hours posted? *They are posted at the route 3 entrance in the Kiosk.*
What about equestrian use, overuse and erosion? *Signs posted around barn.*
Horse riders go everywhere and create erosion. *Need to divert the trails if we note erosion. No plan at the moment to limit horse use.*
I work as grounds keeper. Okehocking Preserve is a gem and the barn is a work of art. I would be devastated if it was demolished. I encourage all to be patient and not remove anything quickly. Climate has changed and earth turns to concrete. Getting very bad erosion by bridge. Wonderful natural resources. Change paths and use woodchips to stop erosion. Grateful that it is there, exercises his sheep dogs there. Compliment township and encourage use.
Need to provide bags for dog walkers to pick up after themselves.
Provide trash cans and you attract trash.
This is a living document, please provide your comments and contact Mary McLoughlin if you see things on the preserve that need to be addressed.
I want to speak for my friends, we are young, I go there 3x a month enjoying bird walking and walks, sunrises in open space, enjoyable. Even kids like us can enjoy it, and we give credit to township for having the space.

Every one here loves this place, and wants to preserve, maintain, and make minor improvements. An explanation of the priority improvements ensued.

A while ago, we did a survey for the township on the recreation uses, was this used in the plan? Are there plans for a large pavilion? *The only building envisioned is environmental center. The uses on the preserve are dictated by the conservation easement and are passive except for 10 acres that may be developed into active recreation based on the conservation easement on the property.*

The historic commission would like the stones saved from the Garret Barn. Great historic feature, but not the best in the township, not a hardship to go, but save some stones for history.

The barn provides context to the area, is there a way to preserve it? *It would be very costly to stabilize and not an outstanding structure in twp. Document and look at ways to re-use materials.(The Township supervisors have voted to remove the barn because it has been deemed a safety hazard by engineers.)*

What about implementation? How are dollars allocated? You have an ecological disaster happening with invasives. What is action plan and timeline? It's an awesome plan and I would like to see efforts spent on preserving the ecosystem before any $ spent on development or barn restoration. Need more support from taxpayers.

Have you thought about fencing in areas and put goats in to eat the invasives? Then dogs to get the deer?

One thought on invasives. People already in chopping vines. It's not like nothing is being done. Hammer the mile-a-minute. Use chemicals and fire. Better living thru chemistry.

Chairman of the Board of Supervisors: Thanks from the Board of Supervisors. I support getting rid of the invasives. Want to see the costs for implementing the plan.

Meeting End 8:05pm

There are an additional 30 days to make more comments. The Plan is on the Township website and is located here at the reception desk for public review. Please send any further comments to Mary McLoughlin at 610-640-1669.

FOLLOWING PAGES INCLUDE:

1. Township Newsletter Management Plan article and public meeting announcement from February 2006, page 2 is cover page for newsletter.
2. Township website home page showing Okehocking Preserve Management Plan link for public input.
3. Willistown Township Planning Commission review letter.

HAPPYNINGS

ONDAY, MARCH 6

PHIA FLOWER SHOW BUS TRIP
t Way to Welcome Spring!

lers and flower lovers on this bus trip to the lphia Flower Show, the first and largest indoor kind. The trip is sponsored by Willistown West and East Goshen Townships, and West rough. See the world's largest indoor show of ultural displays, and gardening ideas—a gardener's ear's theme, "Enchanted Spring...A Tribute to visitors from the fantastical to the practical and tant of gardeners to take up a trowel and start ry will greet visitors as they enter the show in the agrant 16-foot "tree of life", referred to as a eator, Valley Forge Flowers of Strafford, PA. The acre presentation will be "plantified" (as opposed ld's largest and most colorful plant sculpture, re." At more than 27 feet high, Natura will be a n award-winning flower show exhibitor and J. Franklin Styer Nurseries, Concordville, PA, and , Life3, who will make their US debut at the '06 ation featuring Life3 will take place on Monday, e are just two of the many spectacular plant dis- iladelphia Flower Show this year. For details and o the show's website at www.theflowershow.com.

hia Flower Show is a place to have fun, learn, and th this in mind, show organizers will introduce a tion of the show dedicated to everyone from the orticultural expert. "It's Your Garden" will fea- popular and innovative approaches to growing, dscape design. Dozens of presentations and a visitors to compare their favorite entries with ke place throughout each day.

l-class exposition, you'll see masterpieces by d landscapers vying with acres of horticultural culinary demonstrations, an internationally egant afternoon teas, and a most incredible s, gadgets, and supplies.

ows:

rom West Goshen Municipal Complex,
li Pike, West Chester, PA.
est corner of the intersection of Paoli Pike
rth Five Points Road, 610-696-5266.)

t Pennsylvania Convention Center

from Pennsylvania Convention Center

t West Goshen Municipal Complex

cludes roundtrip bus transportation and one ticket lease contact Mary McLoughlin at 610-640-1669 nd leave your name, phone number, e-mail

WEDNESDAY, MARCH 8

7:00 PM – Okehocking Preserve Management Plan Public Meeting

Willistown Township was awarded a grant from the Pennsylvania Department of Conservation and Natural Resources in 2002 to have the team of John Gaadt, an environmental planner, and Alex Van Alen, from Willistown Conservation Trust, write a management plan for Okehocking Preserve. The Trust has passed the project on to John Gaadt and Willistown Township staff member Mary McLoughlin. John and Mary will be presenting a summary of the plan and the management goals and actions to Willistown residents and friends in order to receive comments and respond to questions. This is a great opportunity for those who are unfamiliar with Okehocking to get acquainted with it and for those who know about it to learn more.

The intent of the management plan is to provide Willistown Township with a document for managing and improving the unique natural resources of the Okehocking Preserve while providing important passive recreation opportunities (such as hiking, dog walking, birding and special community events) and managing a future active-recreation site. As such, the publication is less a tome and more a reference guide, a living document that is intended to be "pulled off the shelf" and consulted periodically. Incumbent upon this approach is the need to review and alter the recommendations offered in an ongoing effort to enhance and interpret the needs of the township's residents (for access, education, and recreation) as well as the needs of the unique flora and fauna of the site.

In some respects the township views the Preserve not unlike the great National Wildlife Refuges, intended both as habitats to sustain the health of the planet and as public spaces with access for recreation, education, and interpretation. The management objectives for Okehocking Preserve incorporate these historic conservationist ideals and other objectives suited to the uniqueness of the Preserve. Thus the management mission for the Preserve is to:

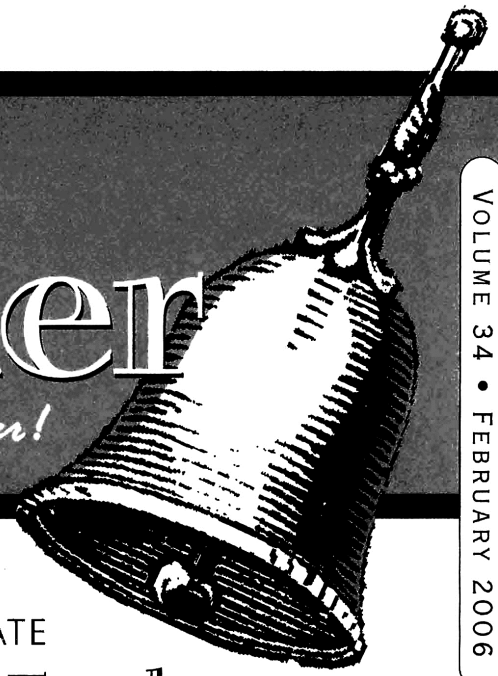
1) **Provide for human recreation and edification about natural resources;**
2) **Preserve and improve natural ecosystems and habitat;**
3) **Integrate into a larger network of protected open space and recreational lands that together sustain a local scale of biodiversity;**
4) **Respect the tract's historic character;**
5) **Protect and improve this property as a sub-watershed of Ridley Creek, thus improving the watershed as a whole; and,**
6) **Integrate the primary uses/functions of this property—both recreational and natural resource preservation and improvement uses and functions—as part of an overall management philosophy for the property.**

To learn more about the Okehocking Preserve Management Plan and offer your thoughts and comments, please come to Towne Hall at 7:00 pm on March 8th for an interactive discussion. A draft of the plan is posted on the

vne Crier

, nearly everybody reads the Crier!

VOLUME 34 • FEBRUARY 2006



OPEN SPACE PROGRAM UPDATE

illistown Open Space Funds eraged to Protect 361 Acres!

es

ed to ear-
arned
on, the
cquired and
natural, sce-
and
$17.5 mil-
than $10
ion. For
ition, more
e and
investment
nvestment)
easements
d the
y, as well
ns. The
ource pro-

rs
wn with
d

provided by over 361 acres in Willistown. Of this acreage, 192+ acres are owned by the township, and 169+ are owned by open space protection partners and valued at over 30 million dollars, but purchased for just over $19.5 million. For every dollar of township taxpayer money used to acquire lands to be owned by other organizations, more than $1.93 was raised through state and county grants—a return on taxpayer investment of almost 200%! These lands are under conservation easements as well as deed restrictions imposed by state and county grant programs, ensuring their use for natural resource protection and recreation *forever.*

Partners in this extraordinary effort include Willistown Conservation Trust, Natural Lands Trust and Greater Chester Valley Soccer Association, all of whom applied for grants and/or raised private funds to ensure the success of this preservation effort. Critical to these successes are our funding partners, Chester County and the state DCNR. The foundation for these conservation and recreation achievements is made up of those residents who voted yes for the 1999 Open Space Referendum, all residents paying earned income tax, and township supervisors, staff, and Open Space Review Board.

Descriptions and Locations of Open Space Fund Projects

To view the township's Park Land and Open Space Fund Land Map, please visit www.willistown.pa.us and look under Department of Parks and Recreation Information. Or stop by the township building between 8am and noon or between 1:00 and 4:00 pm to pick up a hard-copy, or refer to the last issue of the *Willis Towne Crier*.

All Open Space Fund parcels are open to the public from dawn to dusk.

- ***Willistown Township's Okehocking Preserve***
  Location: 5316 West Chester Pike, Newtown Square, PA 19073: between Garrett Mill and Delchester Roads in southern Willistown.
  Description: Passive recreation (about 5 miles of trails) with undeveloped active recreation; open space and natural, historic, and scenic resource protection; 165 acres.

- ***Willistown Conservation Trust Barn***
  Location: In the middle of Okehocking Preserve, same as above.
  Description: Owned and managed by Willistown Conservation Trust, the

Township Maps

Board of Supervisors and Planning Commission Minutes

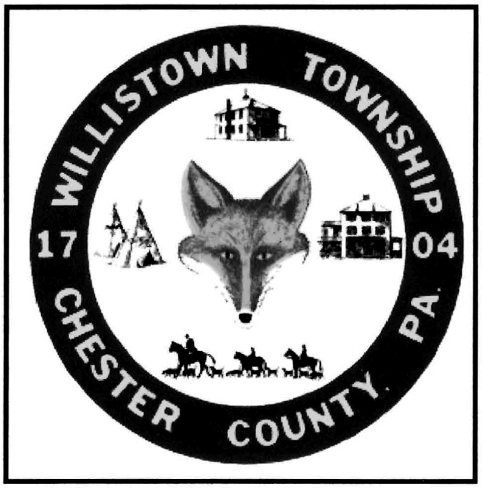
Department of Parks & Recreation Information

1. Park Land and Open Space Fund Land Map

2. Park Land and Open Space Fund Land Map Description

Okehocking Preserve Management Plan

Summer Camp Program 2006



Last Update
April 2, 2006
1010 Hours DST

Link to Management plan as advertised in Newsletter & on 2 Township Street Memo Boards.

Home Page Willistown Township Website

http://www.willistown.pa.us/front_page.htm

WILLISTOWN TOWNSHIP PLANNING COMMISSION

Memo

To: Mary H. McLoughlin, Director of Parks and Preserves

From: Rita E. Reves, Chairman, Willistown Township Planning Commission

Date: February 28, 2006

Subject: Okehocking Preserve Management Plan

Thank you for the opportunity to review the Plan that has been prepared for the purpose of managing the diversified treasures that are present within the Preserve boundaries.

As I read through the text, I was particularly impressed with the integration of all uses for the land, just as had been envisioned when the Township acquired the property.

We are fortunate to be able to save this 155 acres from development and allow our residents to enjoy the use of the land within limits that will conserve it, nurture it, and allow it to remain almost as pristine as it was when the Indians lived on it.

I am certain that the writing of the Management Plan was a large undertaking, but the result certainly was worth the work. Good job, well done!

OKEHOCKING MANAGEMENT PLAN PUBLIC MEETING 3-8-06

* SIGN IN PLEASE *

NAME	EMAIL	CITY	TOWNSHIP
Doug Tothold			Willistown
Marie Bodine	mbfieldstonefarm@aol.com		Willistown
Jerry & Debbie Childers	mbmtnqr8@aol.com		"
Elizabeth Bennett	SKibennet@comcast.net	Berwyn	Easttown
Brian Raicich	brian.raicich@umly.org	Newtown Sq.	Willistown
Brian Quindlen	bq9187@yahoo.com	Malvern	East Whiteland
IAN ROMANSKY	Jaberwockk@aol.com	Malvern	Willistown
Ashley Hazen	ashley.hazen@westtown.edu	Malvern	Willistown
Nancy Keller	nrjjkeller@comcast.net	malvern	malvern Bor.
TERRY DECKER		~~Willistown~~ Newtown Sq.	Willistown
Peter K Lee	peterklee@peoplepc.com	Malvern	Willistown
Mike Devine		Malvern	Willistown
KENNETH DECKER	KennethFDecker1@aol.com	Malvern	Willistown
Alex Van Allen	asva@uctrust.org	Newtown Sq	Willistown
David Rawson		Willistown	Willistown
Bill Lucas	wlucas@integratedland.com	Willistown	—
SUE LUCAS	CONURES@COMCAST.NET	MALVERN	WILLISTOWN
Penny Golding	His Camera	Newtown Sq	"
NORMAN YARNALL	NORMANYARNALL@COMCAST.NET	MALVERN	"